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#### *The Chemists' and Druggists' Diary, 1907.*

39th Year of Publication.

#### Preliminary Notice.

THE preparation of this work has already commenced, and advertisers who wish to avail themselves of the opportunity of making their announcements in the new volume should make sure of getting space by addressing the Publisher of THE CHEMISTS' AND DRUGGISTS' DIARY, 42 Cannon Street, London, E.C.

THE DIARY is presented free to all subscribers to THE CHEMIST AND DRUGGIST, and being in daily use by thousands of our readers throughout the year is the most esteemed and valuable advertising-medium of the kind in the world. Remember that with our unique foreign and colonial circulation it is necessary to go to press at an early date, so that the DIARY may be delivered to subscribers abroad before Christmas.

## Summary.

The subjoined paragraphs give the gist of the more important matters in this issue, with the object of showing at a glance what has happened during the week. See also "Contents" in the first column.

THIS IS OUR ANNUAL EDUCATIONAL NUMBER and the one to which we shall refer inquirers who ask for educational information.

THERE ARE FORTY-SIX PORTRAITS in this issue.

M. GERAUDEL, the inventor of Geraudel's Pastilles, is dead (p. 238).

WHAT SHOULD BE SOLD for "Cattle Salts"? is a question that is asked on p. 249.

MR. REID reviews the present state of pharmaceutical politics in a letter on p. 285.

DR. E. RAY LANKESTER has been retired from the directorship of the Natural History Museum (p. 280).

SOME INTERESTING ITEMS in regard to the trade of the United Kingdom are contained in an article on p. 248.

SOME NOTES are given on the meeting of the British Association which has taken place this week at York (p. 243).

A "C. & D." REPRESENTATIVE has discovered many interesting exhibits at the Austrian Exhibition at Earl's Court (p. 279).

THE ITALIAN PRESCRIPTION which was given in the conundrum column of the Summer Number produced a smaller response than usual (p. 244).

THE PERKIN KNIGHTHOOD AND CELEBRATIONS have induced "Xrayser" to indulge in some interesting historical reflections on dyeing (p. 246).

THE MEN MILLERSHIP, father and son, who are accused of long-firm frauds in connection with the sale of pharmaceutical goods, have been committed for trial (p. 236).

PROFESSOR HERMANN THOMS has been appointed director of the Pharmaceutical Institute of Berlin University. His portrait and some notes on his career are given on p. 280.

A DEPUTATION from the Pharmaceutical Society of the Transvaal has waited on the Director of Customs in regard to the duty on alcohol imposed by the new tariff (p. 239).

MR. RICHARD CLARK, of Raimes, Clark & Co., wholesale druggists, Edinburgh, is a candidate for the Lord Provostship of the Modern Athens. We give a sketch portrait of him on p. 237.

THERE is (on p. 247) an account of the regulations in force in New York State in regard to the practice of pharmacy. The particulars were gathered in the course of a conversation with Dr. William Muir, who has specialised in pharmacy education.

MR. DAVID J. WILLIAMS continues his notes on a scheme of homo study, the subjects dealt with being organic chemistry and practical chemistry. The latter is one which those who use the "Students' Corner" will particularly appreciate (p. 234).

THE NEW COMPANIES that have been registered during the past week include one for the manufacture of a hair-wash, another to acquire a process for the synthetical or other manufacture of neroli oil, and a third for the manufacture and sale of nicotine on a large scale (p. 278).

THE EDUCATIONAL INFORMATION in this number is arranged under the following headings: Pharmacy (p. 251), medicine (p. 265), dentistry (p. 269), veterinary surgery (p. 271), science (p. 271), optics (p. 275). The various conditions upon which diplomas and degrees in these subjects are granted are set out in a concise form. Experiences of candidates for the English Minor, Irish Licence, and Apothecaries' Assistants are given. The portraits of the Government visitors are to be found on p. 253, while an opportunity is given of comparing the portraits of the pharmaceutical examiners of thirty years ago with present-day examiners (pp. 255, 258, and 259).

## Formulas

of "known, admitted, and approved" remedies may be communicated to the Editor at any time for publication in the next editions of "Pharmaceutical Formulas" and the *C. & D. Diary*.



## Corner for Students.

Note.—The analytical exercises conducted by Dr. Leonard Dobbin will be resumed towards the end of September.

### A SCHEME OF HOME STUDY.

By DAVID J. WILLIAMS, F.C.S., Pharmaceutical Chemist.

#### Organic Chemistry (*continued*).

Both for beginner and for those who are studying this subject further it is always wise to repeat the chemical name of the organic substance under consideration. A lot of chemistry is stored up in this way. Ample opportunity is given to a man in his business-hours to keep the subject in his mind in this manner, and even if a substance does not actually fall into the syllabus of the pharmaceutical examination, it is expedient to remember the constitutional name.

Sulphonal is handled almost every day at the counter. Instead of merely being satisfied with regarding the drug as "sulphonal," the plan suggested is immediately to think of it as diethylsulphone-dimethyl-methane (its B.P. description), whereby it will immediately be suggested to one that it is a derivative of methane, that it contains two ethyls, two methyls, and some sulphur. By following out this mental process a substance like salicylic acid under the name hydroxy-benzoic acid will present the following thoughts :

1. It is related to benzoic acid.
2. It contains an OH group which relates it to phenol, and therefore it would be expected to give some colour-test with ferric chloride. Little wonder that it may be prepared from phenol, and that it gives its odour on heating.

As a final example of many such do not be always satisfied with calling spirit of wine "alcohol" or "S.V.R." The name "ethyl alcohol" spells more and means more. It points to its relation with ethane, and it suggests that there is more than one alcohol. Space will not allow of great detail in this direction, but it is intended to impress on the student that he should always have some expression or "tally" for organic substances whereby their chemical properties and constitutions are immediately marshalled up in his mind. Without such methods, aided by class distinctions, it would become next to an impossibility to remember anything concerning the myriads of carbon compounds. They may, however, always be placed in a very limited number of classes.

In the physical part of the subject under treatment the beginner will do well to pay great attention to such processes as fractional distillation, reflux distillation, the methods of obtaining melting and boiling points, and the value of these latter tests in ascertaining the purity of substances. He should then endeavour to understand isomerism in all its forms, by the use of examples which he should work out for himself, and not take for granted the text-book statement that there are five, six, eight, etc., isomers of specified bodies. By working out such examples for himself he will learn more than he imagines, especially in regard to the valency of carbon.

Stereo-isomerism must later on receive some attention, and in this branch some form of constructed model *must* be used. There are many ideas, including differently coloured balls representing the C atoms, etc., and having arms fixed into them to represent valencies, or small quadrangular models (their angles representing valencies). These latter are easily constructed, and with the aid of a mirror all forms of spacial formulæ may be clearly understood.

Great stress should be laid on vapour-density and its value in obtaining molecular weights, and the more that can be learnt concerning general methods of obtaining these latter important values, the better.

In organic chemistry there should be as much practical work as possible. Perhaps there is greater difficulty, but all students can pay some attention to the effect of solvents on bodies, and also the effect of heat. The analysis of organic compounds must receive a place, but much of this in detail, together with the greater bulk of the physical part, can be reserved for second reading.

The demands of the examiners do not seem to be so stringent in this subject, but it is evident that a knowledge

of generalities and syntheses, and their connection among themselves and with the British Pharmacopœia, is required primarily. Finally, it may be pointed out that a student who is fortunate enough to obtain the South Kensington elementary certificate in this subject possesses knowledge which will go a great way to satisfy the demands of the Minor.

#### Practical Chemistry.

No subject requires more care in its attack at the outset than this. It is probable that good work in the practical part of the Minor examination contributes at least 70 per cent. to the candidate's success. By good work, however, is not meant the working out of a chart automatically. There is nothing so disastrous to the making of a good chemist as this mechanical way of working. The questions set from time to time are becoming more frequently framed so as to prevent the candidate doing this. It must not be assumed that the mere obtaining of a correct result in an analysis of a double salt signifies much more than a superficial knowledge of the subject, for a man may by mere feat of memory be able to perform the operations set out in his chart without having the slightest knowledge of the important theories underlying the reactions he is carrying out.

In these days of rush and worry it is granted that the result is a thing which will always be eagerly looked for, be it obtained by the most unsatisfactory means, but to obtain a lasting and beneficial effect it is urged that the student should work in this important branch in as thorough manner as his ability will permit. It is frequently observed that a student goes to study theoretical chemistry as if it had not the slightest connection with practical chemistry, and *vice versa*. They are different subjects to him, and not the application of one to the other. The student should always feel that while he is testing he is preparing, and note with care all attendant phenomena. It has frequently been noticed that beginners read of many substances which are said to be prepared according to certain methods in their theory books as if they are chemical curiosities and are only obtained in the work of advanced scientists. For example, a candidate is asked whether he has seen or prepared cuprous oxide. His answer is often in the negative. Yet when he takes his test-tube, and adds some Fehling's reagent to a solution of glucose, and warms the mixture, he sees a reddish precipitate which he will eventually come to the conclusion is the above substance. The fault is here to be found in the method of certain test books and charts in stating that the addition of such-and-such a solution to another produces a red or a blue or some other colour without stating what this is due to.

This subject is one in which careful observation is of paramount importance. It is particularly necessary that the student should critically note every peculiar phase of a reaction and attempt to explain all changes or seek an explanation in his text-book. Before starting an analysis he should carefully note all the appearances of a substance as to colour, grittiness or otherwise, and crystallographic character. In this way he will frequently be able to draw some important deductions which will be of great value to him afterwards.

At the start it is advisable to apply all tests and perform all experiments on known salts, so that results will be certain and fully explicable, and at the same time some idea will be obtained of the quantities of reagents required to produce a certain result. The note-book should also be at hand to enter up all tests. Here, as previously stated in theory, the value of the equation is especially great. No reaction should pass without entering up an equation.

In a scheme of study such as the one set out, the student should spend a large proportion of his time on what are termed preliminary tests. In this section a man may become so adept that he will be able to foresee his plan of working in the subsequent wet analysis with such a result that he may curtail his labours to an enormous extent. By preliminary tests are meant those carried out with the substance not in solution—*e.g.*, the action of heat on the salt alone or mixed with various fluxes, its capability or otherwise of volatilisation, and flame-reaction; the action of strong acids and the recognition of gases evolved by this means. The candidate should be very persevering in his endeavours to reduce a substance if possible to the metallic condition, since, when he has a metal, he has some-



thing far more tangible and more easily recognisable than he usually has when attempting to deduce the presence of a substance by a colour or precipitate. Of course, there are several metals which it is impossible to test for in this way and many substances will not yield the element in the metallic condition, therefore it does not become at once a negative test. Great importance is attached to the action of acids, but usually little weight is put in text-books on the action of alkalis. Always try the action of strong solution of caustic soda or potash on the powder. Very valuable clues are frequently supplied by this means as to the identity of a substance.

(To be continued.)

## English News.

Local Newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

### Brevities.

The Salisbury Town Council have re-appointed Mr. F. W. Stoddart as public analyst for the city.

The Stepney Guardians have raised the salary of Mr. H. Wilson, their dispenser, from 120*l.* to 130*l.* per annum.

In the Divorce Court on August 6, a decree *nisi* was obtained by Mr. John Hanley, analytical chemist, New Brighton, against his wife, Mabel.

The Crewe Town Council have passed plans of alterations to the premises recently acquired by Mr. James Mavor, chemist and druggist, at Hightown.

At Morpeth on August 8, Fred W. Burrell, described as a chemist, of Stockton, was fined 10*l.* and costs for aggravated assaults on two girls at Newbiggin.

The "Hanley Sentinel" says the election of Mr. E. Jones to the Committee of the Federation is "a distinct compliment to the North Staffordshire Chemists' Association."

The patent-medicine recommendations referred to in the *C. & D.*, July 28, p. 131, came before the annual meeting of the British Medical Association and were adopted.

At Penge on August 7, Louis Thomas Nicholls (17) was bound over on a charge of stealing from a stall at the Crystal Palace three bottles of antiseptic hair-wash, value about 5*s.*

A pill-box maker, summoned at Lambeth Police Court by his wife for maintenance, and questioned about his means, said he estimated his average profits at 35*s.* per week.

The Burslem Town Council have accepted the tender of Mr. A. P. Tiley, chemist and druggist, Market Place, Burslem, for the supply of drugs to the isolation hospital for the next two years.

On the advice of the Local Government Board, the Market Harborough Board of Guardians have decided to provide expensive drugs and medicines, instead of the medical officers doing so out of their salaries.

Speaking at a social gathering last week, the managing director of Messrs. Newton, Chambers & Co., Ltd., of "Izal" fame, stated that his firm paid in wages more than a thousand pounds every day of the year.

The Improvement Committee of the Sheffield City Council have recommended that a sum of 3,250*l.* be paid for two strips of land in West Street, as purchase money and compensation (including a sum for re-building), one of the strips being required for conveyance to Boots, Ltd.

Among the exhibitors at the Royal Lancashire Agricultural Society's exhibition held at Lancaster last week were Messrs. Day, Son & Hewitt, London; Messrs. Day & Sons, Crewe; Messrs. Tipper & Son, Birmingham; Messrs. F. Hewthorn & Co., London; Cupiss, Ltd., Diss; T. Pettifer & Co., Banbury; J. L. Eills & Co., Liverpool; Newton, Chambers & Co., Ltd., Sheffield; Osmond & Sons, Spalding; and Jeyes' Sanitary Compounds Co., Ltd., London.

### East Anglian Notes.

Ten shillings worth of coppers were sent for prize money to the Dereham Sunday School treat by Mr. E. Peck, chemist.

"The Connoisseur" for August contains a lengthy illustrated article on "Bell-metal Mortars," by Mr. D. Davison.

Much of the matter has appeared in the *C. & D.*, and is reproduced by permission of the Editor.

Mr. D. Davison, pharmaceutical chemist, Cromer and Fakenham, is to be recommended by the Education Committee of the Norfolk County Council to a vacant governorship of North Walsham Paston Grammar School, where, it is stated, Nelson received a portion of his scholastic training.

Messrs. Burroughs Wellcome & Co.'s hazeline-snow window is now becoming familiar to residents and visitors of the eastern counties. Yarmouth, Lowestoft, Cromer, Norwich, Fakenham, Dereham, and other places are provided with one or more examples. The East Anglian is nothing if not critical, and has been heard to designate the mountain glacier in the background as a tent and as Spion Kop.

### Midland Notes.

The use of such preservatives as formalin, boric acid, etc., is on the increase in our city. Where is the stuff purchased? Not through pharmacy, it is believed.

The Assizes are on, and it is interesting to note that Mr. Marshall Freeman has had much important work among the men of law, and has appeared in several cases for the Crown.

Although to many the conference is a holiday, it does not seem to have been looked upon as such by the local brotherhood, judging from the many *locum-tenentes* and fresh faces behind the local counters. Truth to tell, it was hard work for them, and they have gone to take a quiet time at some place where the hotels get the change and the waiters the rest.

The important question of purity of chemicals has again caused disagreement between seller and purchaser, the latter being sold. The question arose upon the purity of a common chemical which was used for the determination of a certain element of impurity in a metal and was found to contain the said impurity in unusual quantity. Happily, the error was detected in good time, or a reputation might have been shaken.

### More than Fumes.

At North London Police Court on August 4, Francis Seaby sued Messrs. W. J. Bush & Co., Ltd., manufacturing chemists, Hackney, for 1*l.* wages in lieu of notice (see *C. & D.*, August 4, p. 202). The defence was justification for summary dismissal because of intoxication. Plaintiff said he had been overcome by the fumes of 24 gals. of proof spirit which he had to transfer from a tank to a percolator. Mr. John Oldham Braithwaite, Ph.C., manager of the works, said the timekeeper reported that the plaintiff was drunk during his employment, consequently he paid him off at once. Mr. D'Eyncourt (the Magistrate) asked Mr. Braithwaite whether, if the man had a certain amount of drink in him, the handling of proof spirit would make him worse. Mr. Braithwaite replied that in his thirty-two years' experience he never saw a man get drunk unless he drank the spirit. There are not sufficient fumes given off that quantity of spirit to make a man feel unsteady. It would be absolutely impossible for a man to get drunk as the plaintiff suggests. The timekeeper and a warehouseman deposed that in their opinion plaintiff was drunk after being out to tea. Mr. D'Eyncourt dismissed the case.

### The Alleged Long Firm.

The two men Millership (see *C. & D.*, August 4, p. 203), father and son, again appeared before Mr. Gillespie at West Ham Police Court to answer charges of obtaining goods by fraud from Burroughs Wellcome & Co., the British Liquezone Co., Ltd., Icilma Co., Ltd., and Leslies, Ltd. Additional evidence as to the disposal of the goods was given by Abraham E. Howling, of Forest Gate, E., who bought 12 lb. of lint for 9*s.* from a man who said he represented George Wright & Co., of Claremont Road, Leyton. William K. Snell, manager of Hooper's Drug-stores, High Street, Peckham, deposed to the younger prisoner trying to sell him Burroughs & Wellcome's goods at 50 per cent. below list-price. Witness was suspicious at the big discount and communicated with Burroughs Wellcome & Co. "Edeo Stratford" was stated by another witness to have been the telegraphic address given of the Eastern Pure Drugs Co., of which "G. Miller" was proprietor. The elder prisoner said his son had nothing to do with the ordering



of the goods. He was simply an agent on commission. This statement was corroborated by Ralph Plosky, glass merchant, Devonshire Road, Chiswick. In cross-examination Plosky said "A. Krosick," which appeared on several of the delivery-notes in connection with these goods, was his wife's maiden name. She used it in connection with the Eastern Pure Drugs Co., which was started with her money. The idea of that business was really his (the witness's), though he knew nothing about drugs. He first thought of it in connection with a patent medicine, the recipe of which was supplied by a man introduced to him as Dr. Comfort. It was a female pill. He did not know the ingredients, not being a chemist, but he could bring some of them. He had bought drugs from Burroughs Wellcome & Co., and had paid for them. He did not know "Watson & Brandon" nor "George Wright & Co." The profits of the Eastern Pure Drugs Co. had not been divided in any way. He had taken one account to disburse certain expenses he had been put to. The signature on the cheque produced—one for goods sold by the younger prisoner—was put there by him. The younger prisoner had given his name as "J. Hayward," and witness endorsed the cheque "J. Hayward." Evidence of a previous conviction against the elder prisoner was given, and both were committed for trial at the Central Criminal Court.

#### A Summer Outing.

The employes at Messrs. T. Morson's works at Ponder's End had their annual outing at Welwyn on July 28. The gathering was of special interest this year—firstly, owing to the first appearance of the senior partner at these gatherings; secondly, in view of the retirement of Mr. T. J. Tipping (works-manager). After dinner, served at the Rose and Crown, Mr. Harrison (former manager) proposed the toast of "The Firm," to which Mr. T. P. Morson replied in a few words, after which he handed to Mr. Tipping a gold watch, suitably inscribed, as a mark of the firm's appreciation of fifty years' active service. Mr. J. Harpham, Ph.C., who now takes up the position of manager, then presented a marble clock to his retiring colleague on behalf of the staff. Mr. Tipping, deeply moved by these expressions of good will, thanked in turn Mr. Morson and the staff for these unexpected tokens of esteem. Mr. T. D. Morson, who supported his father, called upon those present to record their thanks to Mr. A. J. Tipping for the able manner in which he had arranged the day's events, and said he hoped that when it became necessary for any of them to sever their connection with the firm after long service or through ill-health, they would still unite at these annual functions. After Mr. A. J. Tipping had briefly replied, the company adjourned to a suitable spot close at hand, where a photograph was taken. A cricket-match was then arranged, which, after great excitement, ended in a tie. After tea the homeward journey was commenced, Ponder's End being reached at 10.45 P.M., the outing being voted the best on record.

#### The Dispenser's Widow.

At the last meeting of the Holborn Board of Guardians a letter was read from the widow of Mr. Thomas Knowles, who for about fourteen years had been a dispenser to the Board. Mr. Knowles died, leaving his widow totally unprovided for, and she asked the Board's kind consideration of her case. The Clerk was unable to suggest any means of helping the lady which would be sanctioned by the Local Government Board. The Chairman regretted they could not award Mrs. Knowles a small pension.

#### Fires.

A fire occurred on August 2, on the premises of Mr. John Walters, druggist and drysalter, West Street, Oldham. Some chemicals which were being heated boiled over and became ignited. Fortunately, the damage done was not serious.

On August 6 an outbreak of fire occurred on the premises of Mr. A. Whitehead, chemist and druggist, Church-street, Hartlepool. It originated in one of the windows, and the fire-brigade was soon on hand. The flames were got under with great promptness, but photographic apparatus and materials, etc., displayed in the window, and of considerable value, were destroyed. The cause of the outbreak is thought to have been the fusing of electric wires.

#### Analyses of Drugs.

The only sample of drugs found to be adulterated in Nottinghamshire last quarter was one of sweet spirit of nitre.

At St. Albans during last year two samples of lime-water were the only drugs taken for analysis. One was not strictly in accordance with B.P. requirements, and the vendor was warned.

The medical officer of health for Chelsea, in his annual report, which has just been issued, states that during the year ten samples of quinine-wine and ten samples of iron-wine were taken for analysis. One of the former and five of the latter were not in accordance with the requirements of the British Pharmacopoeia so far as such requirements are specified; but as there did not appear to be any definite standard for the composition of these wines, no legal proceedings were taken. The vendors were, however, informed of the results of the analyses.

The City Analyst's report for the quarter ended June 30 shows that he has received and analysed 151 samples of food and drugs during the quarter. Of these four of compound liquorice powder were all found to be genuine. Of two samples of camphorated oil one was genuine, while the other contained the required proportion of camphor, but the oil with which the sample was prepared was of somewhat suspicious character, though no definite adulteration could be detected. Of five samples of sweet nitre four were genuine and one of inferior quality.

#### Cricket.

May & Baker C.C. v. Barronetta C.C. (Barron Harveys & Co.).—Played at Raynes Park on August 4, and resulted as follows: Barronetta, 120 (Halfacre 47 not out); May & Baker, 108 (Edwards 52).

Sheffield Pharmacy Athletic Club v. Sheffield G.P.O.—Played at Millhouses on August 2. The postal officials batted first, but chiefly owing to the excellent bowling of Hopkinson were dismissed for 36, Hopkinson doing the hat trick. The chemists opened their innings very badly, and had four wickets down for 2 runs, the hat trick being played on them by Rayer for the G.P.O. Dowson and Brooks then started and not only managed to wipe off their opponents' score, but with eight wickets down the chemists had 86 to their credit, and won by 50 runs and two wickets.

## Irish News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

#### Window Smash.

On August 7 a runaway pony dashed into a large plate-glass window in the shop of Messrs. C. & J. Montgomery, chemists, Royal Avenue, Belfast. The window was shattered and its contents damaged, while the pony was seriously injured.

#### Tampering with Medicine.

The tampering with medicines at Listrar dispensary was discussed by the Monaghan Guardians on August 6. A fortnight ago Dr. R. A. Crawford reported that a stock-bottle containing liquor morphine-hydrochlor. had been interfered with, and an analysis by Mr. Chas. McMullan, analyst, Belfast, showed that the contents consisted mainly of decomposed urine. Several Guardians strongly denounced the outrage, and it was resolved to lay the whole facts before the Local Government Board, with a view to an inquiry being held.

#### Unreturned Empties.

With reference to the paragraph in our issue of July 28, p. 112, respecting Messrs. Hunt & Co.'s claim from the Nenagh Board of Guardians for 13*l.* due for empties, we may state that the phrase "a source of blackmail" was used by the Clerk to the Guardians, who said:

He thought they could make an agreement with the medicine-contractors in future that they would not hold them responsible for the empties, but that they would always endeavour to have them returned. This new clause [in the L.G.B. tender-form] meant a source of blackmail and harassment to the Boards. It was almost impossible to act up to it, because the doctors won't get the bottles packed or sent back.



**Compounders' Salaries.**

At the last meeting of the Tralee Board of Guardians a letter was read from the Local Government Board sanctioning the following scale of salaries for the compounders of medicine in the Union: (1) a scale providing for an initial salary of 45*l.* a year for the compounder in the Tralee dispensary district, rising, by an increment of 5*l.* after each four years' service, to a maximum of 65*l.* a year; and (2) an initial salary of 40*l.* a year for the compounder in the workhouse, rising, by 5*l.* after each four years' service, to a maximum of 60*l.*—both scales to be retrospective.

**Money First.**

Messrs. Sumner & Co., of Liverpool, wrote to the last meeting of the Ballymahon Guardians claiming a sum of money at Ballymahon, Ballymore, and Abbeyshrule Dispensaries, and stating that they should proceed to recover if cheque were not sent them. The Clerk said that the contractors would not send the money to pay for the packing and carriage of the empties, and when they would not do that, "let them do what they like." Mr. Mullen: The caretakers will remove them. The Clerk: Yes, if they are paid. The Guardians made an order that the empties be returned when the contractors sent a cheque for packing, etc.

**Personal.**

Mr. Chas. J. B. Dunlop, M.P.S.I., the Medical Hall, 12 Lower Camden Street, Dublin, has passed the examination of licentiate of midwifery and gynaecology of Royal College of Surgeons and the Royal College of Physicians, Ireland, also the examination of licentiate in midwifery of Rotunda Hospital, Dublin.

At Belfast Board of Guardians this week a resolution was proposed to co-opt Mr. D. W. Elliott, pharmaceutical chemist, Shaftesbury Square, a member for Windsor Ward, in the room of Mr. R. G. Moffett, retired. An amendment was moved that Miss Rebecca Kenny be elected, and on putting it to the vote the lady won by twenty-two votes to sixteen.

Mr. John J. Dowling has distinguished himself in the recent arts examinations under the Royal University of Ireland by taking second place both in experimental physics and chemistry, together with honours in higher mathematics, and was awarded a scholarship. Mr. Dowling is the youngest son of Mr. J. J. Dowling, secretary of Messrs. Boileau and Boyd, Ltd., Dublin, and has had a most successful career.

**The Analysts won't Like it.**

At Antrim County Council meeting in Belfast on August 7, arising out of the reports on prosecutions under the Food and Drugs Act, Mr. Stott said that the Council should adopt the rule which prevails in Scotland, that when an analyst is found to be wrong in his analysis on appeal to Somerset House he is called on to pay the costs of the prosecution. It has been said that six out of seven prosecutions are successful, but how many of the six have been defended? There might be a great injustice done to poor people who are unable to question the analysis, and it would only be fair that the analyst if either through error or incompetence was found wrong by Somerset House he should pay the costs of the prosecution. Mr. O. Greer (county solicitor) said he understood the law to be that where it turned out that an analyst had made a mistake if he paid the prosecutor's costs the case was not reported; if not, the case was reported. Mr. Stott moved that the matter be referred to the Law Committee, and this was agreed to.

**Scotch News.**

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

**Business Change.**

Mr. Hunter is opening a new pharmacy in the village of Cathcart.

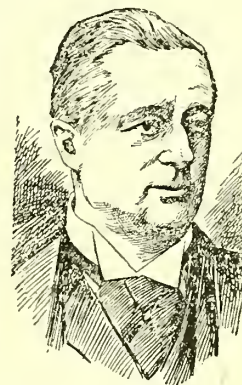
**Shop-improvements.**

Mr. Samuel Lawrence, chemist and druggist, Oban, has had his pharmacy in George Street considerably enlarged and improved. By removing a partition the main shop has now a superficial area of 42 ft. by 20½ ft. A new series of

handsome showcases and a fine dispensing-counter have also been fitted by Mr. D. Grant, shopfitter, St. James's Place, Edinburgh. The dispensing-counter has a plate-glass mirrored front 12 ft. long by 6 ft. high. Behind the dispensing-department a new and enlarged dark-room for the use of amateur photographers has been fitted up.

**For the Provostship.**

Mr. Richard Clark, of Raimes, Clark & Co., wholesale druggists, Edinburgh, is resigning the chairmanship of the Edinburgh Parish Council, which he has held for twelve years, in order that he may have greater freedom for his work on the Edinburgh City Council. He is a baillie of the city and a candidate for the Lord Provostship. The sketch portrait which we give of Mr. Clark is from a local paper, and is a fair likeness. He resembles somewhat Mr. Joseph Chamberlain, but does not wear a monocle nor an orchid. He is a Conservative.

**The Week's Poisonings.**

SEVENTEEN fatalities from poisoning have occurred during the week, five being misadventures. A Shaw widow, named Mary Jane Shaw (60), accidentally poisoned herself by drinking liquid ammonia in mistake for brandy and water, while Ann Hall, of Stratford, died from drinking ammonia in mistake for a gout-medicine. At the inquest on Mrs. Shaw the Coroner (Mr. F. N. Molesworth) said it was a case in which two bottles were almost similar. It would have been far better had the bottle containing ammonia been a three-cornered one. Poison should not be put in ordinary spirit-bottles. It should be placed in some kind of a special bottle which could be easily distinguished, even in the dark. The bottle containing the ammonia was properly labelled, and no fault could be found in that respect. He strongly urged that poison be placed in specially designed bottles, as a protection to the public. At Islandmagee, a little boy, named John Milliken, ate some bread saturated with strychnine solution that had been laid under a chest of drawers to poison mice. The boy died of strychnine poisoning. Thomas Jones (4) died at Llanelly as a result of eating the berries of the mountain-ash. The only other unmentioned unscheduled poison responsible for fatality was spirit of salt, taken by Martha Jane Watts (18), and her sweetheart, John Chapman (20), at Manchester, with a view to suicide. The girl died, but the man has recovered. Two deaths were caused by laudanum. Mary Bower (46), of Sheffield, took an overdose by misadventure in the endeavour to secure sleep. John Grey (72) was in low spirits owing to the suicide of his daughter a short time ago, and poisoned himself with laudanum. Five suicides took carbolic acid and four oxalic acid. The carbolic-acid victims were Mary Elizabeth Tomlinson (41), wife of a boot-manufacturer at Birstall; Ned Gotheridge (21), of Riddings; Thomas Whitlock (39), a cleaner in the employ of the Holborn Borough Council; Henry Covell (51), of Lewisham; and George Henry Bailey (44), a Gorton labourer. Under the impression that the bottle contained brandy a Smethwick woman drank from it and found, when too late, that it was carbolic acid. The oxalic acid suicides were William Tait (45), a Chelsea hairdresser; Annie Dewsbury, of Hammersmith; Mabel Moore (20), a Mansfield servant-girl; and Robert Tilley (62), of Plumstead.

**DIAGNOSIS.**—The "Medical Press" expresses surprise at the statement made by Sir James Sawycr, at the meeting of the British Pharmaceutical Conference at Birmingham, to the effect that "the medical profession has well-nigh perfected itself in the diagnosis of disease," and that it is "the treatment of disease that is lagging behind." The "Press" says that to speak of diagnosis as "well-nigh perfect" is to use the language of hyperbole, and it cannot believe that any practising physician can have made such a statement.



## French News.

(From the "C. & D." Paris Correspondent.)

M. GERAUDEL, pharmacist, inventor of the well-known Geraudel's pastilles, has died. M. Geraudel was a Knight of the Legion of Honour. He was seventy years old at the time of his death.

**TO PREVENT FORGING PRESCRIPTIONS.**—M. Souque, pharmacist, Bordeaux, referring to a contemporary to the Canaby case, proposes that all prescriptions should be made out on special Government paper, such as is used in France for so many legal and other important documents.

**THE MOTOR-JUGGERNAUT.**—While cycling across the Champs Elysées, Paris, on Sunday evening last, a chemist named M. Benjamin Cordier was knocked over and killed by a motor-car travelling at a rapid speed. The motor-car escaped, and, profiting by the excitement of the other witnesses of the accident and the attention they were giving to the chemist in his sore distress, a thief rode off with the bicycle.

**EXPERT CHEMISTS.**—The Committee appointed by the Senate to examine and report on the law voted by the Chamber of Deputies creating a diploma of expert chemist is presided over by M. César Duval, the well-known pharmacist Senator. M. Henri Ricard is "rapporteur," and the other members of the Committee are MM. Genoux, Hayez, Pieltre, Gouju, Félix Martin, and Poirrier (the head of the St.-Denis Chemical-works).

**PHARMACY AND ANARCHY.**—Charles Large, assistant at the Pharmacie Berzélius, rue Berzélius, Paris, has been arrested on the charge of being the sender of the explosive postal parcel recently forwarded to an address in the rue de Bondy, Paris. (He appears to be the brother-in-law of the victim of the Haegeli explosion.) M. Courel, owner of the pharmacy, which is situated in the "Epinettes" quarter of Paris—a working-class district close to Batignolles—was promptly interviewed, and explained that Large had served in the pharmacy about twelve months, but was only there two days a week. Large appears to have formerly been a fitter or engineer. He had a distaste for the fair sex; he married in 1888, but only lived with his wife three months, and she obtained a divorce.

**THE A.F.A.S.** (the Association Française pour l'Avancement des Sciences), the French counterpart of the British Association, held its annual meeting this year at Lyons simultaneously with the important gathering at York. The French Congress was presided over this year by Professor Lippmann, the eminent scientist and member of the French Institute. The meeting was opened at nine o'clock on Thursday morning, August 2, by M. Lippmann, in the grand amphitheatre of the Lyons University, and the presidential address delivered by him had for title, "Industry and the Universities." The President, whose position as professor at the Paris Sorbonne enabled him to speak with special authority, referred to the bond which unites, and ought to unite, Science and Industry. He insisted especially on this point, and drew particular attention to the ability with which German and American manufacturers and those of other nations had surrounded themselves with chemists and scientists for the furtherance of their trades and industries. Among the sections of the Congress, that of Medicine necessarily occupied an important place, and the prophylaxy of syphilis, as well as the prevention of tuberculosis, were among the principal items discussed. The latter subject especially has attracted attention, and the papers read included one by Professor Maragliano, of Genoa, who referred to his researches in this connection since the first paper read by him on the subject at the meeting of the A.F.A.S. at Bordeaux in 1895. The antagonism between the Italian scientist and Professor Behring seems fairly apparent. The Association brought its meetings to a close at Lyons on August 7, and the members separated to take part in various excursions. The town of Lyons, which the Association had not visited for thirty-five years, gave the members a cordial reception and extended great hospitality. Next year the meetings will be held at Reims. In the section of hygiene a tardy but interesting paper was read on the subject of the sterilisation of drinking-water by ozone, by M. Lacomme.

## Australasian News.

The fullest information regarding the Australasian drug-trade and pharmacy is given in "The Chemist and Druggist of Australasia," copies of which can be obtained at 6d. each, post free, from the office of "The Chemist and Druggist," 42 Cannon Street, London, E.C.

Note.—"The Chemist and Druggist" is regularly supplied by order to all the members of the following, among other societies:

Central Pharmaceutical Association, N.Z.  
Canterbury (N.Z.) Pharmaceutical Association.  
Otago Pharmaceutical Association, N.Z.  
Pharmaceutical Society of New South Wales.  
Pharmaceutical Society of Queensland.  
Pharmaceutical Society of South Australia.  
Pharmaceutical Society of Tasmania.  
Pharmaceutical Society of Western Australia.

## The Commonwealth.

**THE COMMERCE ACT.**—The regulations under the Commonwealth Commerce Act affecting the importation of medicines containing alcohol or narcotics are being considered by the State authorities in New South Wales, Victoria, and South Australia, but nothing so far has been made public. In all probability regulations more or less identical will be adopted compelling the disclosure of the facts in all medicines made or sold in these States, if the medicines contain any narcotic, or acetanilid or similar substances, or if (not being B.P. preparations or sold as avowedly alcoholic preparations) they contain more than 10 per cent. of proof spirit and the average dose recommended is 60 minims or more for adults or 30 minims or more for children. After the regulations are published ample time will be given for all firms to adjust themselves to the changed conditions. In the meanwhile the health authorities are always anxious to hear from all interested parties how their business is likely to be affected by such proposals. British firms who are concerned in the proprietary-medicine trade are advised to communicate with the authorities without delay if they can give information which may modify the proposals.

## New Zealand.

**A BLIGHT-PREVENTIVE.**—Mr. W. C. FitzGerald communicates to the local paper the following method of keeping potato, arrowroot, and ginger crops free from blight. It has been used in the West Indies with considerable success. The specific is made of 6 lb. of sulphate of ammonia and 6 lb. of nitrate of potash, dissolved in 25 gals. of water. The same strength is used for all seeds. The seeds are soaked four-and-twenty hours, and in the case of potatoes are allowed to dry before planting, so as to avoid mildew.

**DISPENSING PROPRIETARIES.**—At Napier on April 24, the Hawke's Bay United Friendly Societies' Dispensary sued G. T. Cross for 2*l.* 16*s.* 6*d.* for drugs supplied. In giving judgment the Magistrate said that the case turned upon the rule which stated that "the object of the Society was to raise a fund by the contributions of members, etc., for the purpose of supplying medicines and such proprietary preparations as shall be approved of by the board of management, patent and other proprietary medicines excepted, to all members of societies or branches who shall be from time to time members of this institution." Dr. Edgar, the lodge doctor, prescribed a mixture of Stearns' Tritipalm and water. When this was first made up the dispensary manager told defendant that he would have to pay for it, but when an account was rendered he paid certain items, and disputed these on the ground that he was entitled to medicines free as a member of the Napier Lodge of Oddfellows. The defendant admitted obtaining the goods, but pleaded that the medicine in question is not a proprietary medicine because it was mixed with water, and that the Dispensary Society had no power to make a rule which conflicts with the Oddfellows' Society. Dr. Edgar, called by the defendant, said that he considered Stearns' Tritipalm a proprietary preparation, none the less so because water was added. The Magistrate held this to be conclusive. Judgment was given for the plaintiff for the amount claimed, 2*l.* 16*s.* 6*d.*, with costs 1*l.* 14*s.*



## South African News.

(From our own Correspondents.)

Note.—"The Chemist and Druggist" is regularly supplied by order to all the members of all the Pharmaceutical Societies in British South Africa, viz.:

South African Pharmaceutical Association.  
Pharmaceutical Society of Cape Colony.  
Natal Pharmaceutical Society.  
Transvaal Pharmaceutical Society.  
Rhodesia Pharmaceutical Society.  
Northern District Chemists' Association.  
Pharmaceutical Society of Orange River Colony.

### Cape Colony.

MR. ASTELL J. WILSON, representing Messrs. C. J. Hewlett & Son, wholesale and export druggists, London, was in Cape Town when the last mail left.

TRADE-MARKS.—Karl Schwarz, of Cape Town, intends applying to the Registrar of Deeds, Cape Colony, on August 23, to register a device consisting of a butterfly with the letters "B.B." at the side, in Classes 1 and 2, for flowers of sulphur.

AN EXPLOSION.—On July 7, at a sale in the King's Warehouse, East London, while a gentleman was examining what appeared to be an ordinary stone bottle, it exploded, the contents burning his clothes severely. The bottle contained hydrofluoric acid.

THE COURT OF ETHICS.—The report of the Colonial Medical Council shows that during the year 1905 formal complaints were brought against five medical practitioners for alleged improper or disgraceful conduct in a professional respect. In two cases, formal reprimands were administered; in another case the Governor was recommended to cancel the licence of the accused; and in the remaining two cases the Council dismissed the complaints.

GOLD IS REPORTED, on very good authority, to have been discovered about fifteen miles from Cape Town, writes our Cape correspondent. On equally good authority the report is characterised as absurd. South Africa is producing more gold to-day than ever before, and business is about as depressed as it can be. What the drug-trade really wants to find is a little gold in its till now and again. A good coal-mine somewhere near the Cape peninsula would prove of more benefit to the Cape Colony than either a diamond-mine or a gold-mine.

NO CATCH.—The "Graaf Reinet Advertiser" says that an advertisement appeared in its columns for ten days for a well-educated youth as an apprentice to a chemist, and not a single reply was received. Either well-educated youths do not exist in the vicinity of Graaf Reinet, or they are so well educated that they go in for ostrich-farming, cattle-raising, butchering, or some other business that calls for a little less study, more leisure, and less expense, and in which, in these days of storekeepers selling medicines, there is more monetary satisfaction.

A CHEMISTS' SMOKER.—The Pharmaceutical Society of Cape Colony gave a very successful smoking-concert on July 11, at the Royal Hotel, Plein Street, Cape Town. The chair was occupied by Mr. Councillor Jones, Vice-President of the Society, and among others present were Mr. D. K. Petersen (President), Mr. Harry Evans (P. J. Petersen & Co.), Mr. Alf. H. Mathew (Heynes, Mathew & Co.), Mr. A. J. Rivett (Lennon, Ltd.), Mr. W. E. Rogers (Oppenheimer, Son & Co., Ltd., London), and Mr. F. H. Moore (Burroughs Wellcome & Co., London). The programme included songs by Messrs. Bob Mathews, Fetherston, Sainsbury, Collier, Muller, Dennis, Cope, and Percival. During the interval Mr. Evans presented a bat to Mr. Scaife, and balls to Messrs. Muir and Bisset for the best batting and bowling averages respectively during the past season in the Chemists' Cricket Club. Mr. Evans was the accompanist, and hearty votes of thanks to that gentleman, to the artists, and to the Chairman terminated a most enjoyable evening.

### Natal.

A NEW START.—Mr. T. M. Allin, for ten years manager of Messrs. Reed & Champion's Berea dispensary, Durban, has opened an up-to-date, well-stocked shop, higher up the

Berea, near the toll-gate. Mr. Allin is a well-known and popular chemist, and deserves all the success which his *confères* wish him in his new enterprise.

### Transvaal.

BUSINESS CHANGES.—A new pharmacy will shortly be opened in the Empire Theatre Buildings, Kruis Street, Johannesburg, under the title of the "Empire Drug Co."—The Imperial Pharmacy, for many years conducted by Mr. A. Harris, and of which Messrs. Brande and Righthouse are the present proprietors, has been removed from 132 Commissioner Street to more commodious premises at the corner of Von Brandes and Commissioner Streets, Johannesburg. The proprietors of the Koedoe Pharmacy, of Pretoria, will shortly open a branch in the rising town of Ermelo, in the Eastern Transvaal. The new pharmacy will be under the management of Mr. N. Ackermann, who for several years conducted De Hollandsche Apotheek in Pretoria.—Mr. Lewis Thomas, Past-President of the Pharmaceutical Society of the Transvaal, has severed his connection with Messrs. Loewenstein, Adams & Co., Ltd., of Market Square, Johannesburg, with which company he has been associated for the past thirteen years, for the last two and a half years as managing director. Mr. Thomas has opened a retail business on his own account in Loveday Street, Market Square, Johannesburg. He is well known and much liked in the town. He is President of the Cambrian Society of Johannesburg, and his many friends wish him every success. Mr. Thomas is a son-in-law of Dr. Symes, of Liverpool, and was manager for Mr. Tanner, of London, before taking up his abode in the Transvaal.

### Orange River Colony.

BUSINESS CHANGES.—It is rumoured that Messrs. Gardner & Co., of Port Elizabeth, are establishing a wholesale depôt in Bloemfontein.—Messrs. Heynes, Mathew & Co. have moved into their new premises in Market Square, Bloemfontein.

O.R.C. MEDICAL AND PHARMACY BOARD.—At a meeting of the Board held at Bloemfontein on July 13, Dr. Ramsbottom presiding, the Executive Committee submitted an inquiry by Messrs. Stranach and Williams, asking if they might be registered as chemists and druggists in the Colony, holding Natal Pharmacy Board certificates of about twenty-five years ago. If not, were they entitled to open a shop in their names at Bethlehem, to be managed by a registered chemist and druggist. Further, whether they were compelled to label in accordance with the Poison Law a patent medicine included in Schedule 3, when, in fact, it does not contain a poison. After discussion it was agreed to obtain the opinion of the Attorney-General on the registration-point. With reference to the poison-label it was pointed out that the Ordinance would have to be complied with, whether the medicine contained a poison or not. The Board had made representations to Government, however, and it was probable that the Ordinance would be amended in that respect. It was agreed that the Board request the Colonial Secretary to instruct Resident Magistrates to make a surprise inspection of the sale-of-poison books kept by general dealers, and to report to the Board. The President said he had been asked by a local chemist whether the Board intended to have a special form of poison-book, which should also contain the poison regulations. After consideration the pharmaceutical members of the Board agreed to draft a book before the next meeting. The Board then discussed the question of what was and what was not "advertising." A letter was read from the Attorney-General, stating that the request of Dr. Hunter, of Bethlehem, to practise as a medical practitioner and also to open a chemist and druggist's shop, would be contrary to law. The Board consequently refused Dr. Hunter's application to that effect.

### PHARMACEUTICAL SOCIETY OF THE TRANSVAAL.

A COMMITTEE-MEETING was held on July 9 at Johannesburg, with the new President, Mr. R. Q. Leeds, in the chair. There were also present Messrs. Butters, Keir, Adams, Behrmann, Rennie, Smith, Adcock, Purnell, and Macdonald (Secretary).



The meeting was called chiefly to elect a deputation to interview the Director of Customs on the alcohol question in the new Customs tariff, and the following gentlemen were elected to form the deputation: The President and Mr. A. S. Smith (Johannesburg), Mr. Adcock (Krugersdorp), and Messrs. L. R. Tibbit and Raworth (Pretoria). The meeting also decided that a sub-committee be formed to make the necessary alterations in the retail price-list, owing to the advanced prices in the wholesale lists.

The deputation appointed to interview the Director of Customs at Pretoria on July 10 subsequently reported as follows:

In opening the question of duty on rectified spirit, the produce of the vine manufactured within the Union, the Director of Customs stated that duty levied on same would be 9s. per proof gallon, but on preparations made from such spirit 9s. per liquid gallon. With regard to rebating the whole or part of this duty when the spirit was used for manufacturing purposes, he believed that it would be no hardship to the Transvaal chemist to pay the same duty as the Cape. It was pointed out that under such circumstances the Transvaal chemist would be placed at an unfair disadvantage owing to higher cost of labour in this Colony and the plant necessary. Further, the loss by evaporation would be greater, and, preference having been shown to Cape Colony in practically giving their distillers a monopoly, it would be unreasonable to place the Transvaal chemist at a disadvantage with the second manufacturer. The Director of Customs acknowledged the objections and intimated that the Government were desirous of encouraging local manufactures, and would see that the Transvaal chemist was not on a worse footing than in the other South African States. He requested that a comparative statement, giving details regarding cost of production of tinctures in the two States, should be submitted to him by the chemists. This would assist him, he said, in forming his opinions with reference to rebate, and in his recommendations to the Government. He called attention to the difficulties in the way of full rebate being allowed, and asked for suggestions as to the best means of controlling spirit entered for manufacturing purposes. In the event of the duty being rebated he promised to make the conditions of supervision by his department as simple as possible. The question of pills being raised, the director gave as a ruling that tablets, tabloids, and pills in bulk must pay duty under Clause 51; but if in packages of not more than 100, and not brought within the conditions of Clause 53, these lines would be subject only to duty under Clause 175. Non-spirituous preparations not of a secret nature, such as Parrish's syrup and seidlitz powders, are liable only to duty under Clause 175. The Director further ruled that a non-spirituous proprietary medicine, even though labelled in the possessive case (such as "Smith's sarsaparilla"), would, if not recommended for any disease or affection of the body, be subject only to duty under Clause 175.

After agreeing to forward the statements asked for, and thanking the Director for his reception, the deputation withdrew.

## American Notes.

(From our American Correspondents.)

CONSIDERABLE PROGRESS seems to have been made in collecting funds for the Procter memorial monument to be erected in the grounds of the Smithsonian Institution in Washington. At the meeting of the New York State Association not long ago \$311.50 was subscribed, and quite gratifying amounts have been collected by other associations. At this rate pharmacy will ere long be represented at the national capital by a fitting monument to one of its great men.

A S.A. BRANCH.—Mr. Nathaniel Nicolai, who has just returned from a three months' trip to the United Kingdom in the interests of Parke, Davis & Co., has been commissioned by the house to establish a South American Branch at Buenos Aires. The particular district intended to be covered is represented by the Argentine Republic, Uruguay, and Paraguay. Mr. Nicolai speaks fluently English, French, German, and Spanish, in addition to his own native Russian.

NOT SO SUCCESSFUL.—Not all men in America who seek to build up "chains" of drug-stores (or "company pharmacies," as they might be called) succeed in their purpose. William Wilson owned six prosperous pharmacies on Broadway, New York City, a few years ago. Now the

number has been reduced to two, and, to cap the climax, Mr. Wilson has been forced into bankruptcy by the insistence of a few creditors. The Wilson drug-stores have been landmarks in Greater New York for many years, but they are giving way to other names—names like Hegeman, Riker, Jungmann, and Caswell-Massey.

THIRTY DRUGGISTS IN GREATER NEW YORK have been arrested for selling elixir of calisaya at their soda-fountains. This elixir is one of the "National Formulary" products, and contains about 20 per cent. of alcohol. The national revenue authorities declare that this quantity of alcohol in a soda drink is rendered illegal by a ruling made some three or four years ago, but never previously enforced. Every one of the thirty druggists, since he made the elixir himself, is called upon to pay a rectifier's licence of \$100 in addition to his regular retailer's governmental liquor-licence of \$25.

THE A.P.A. MEETING.—Great preparations are being made for the meeting of the American Pharmaceutical Association during the first week in September at Indianapolis. The Section on Education and Legislation will largely devote itself to the subject of patent-medicine legislation, a subject which has become very acute within the last year or two. The two national Associations representing the boards of pharmacy and the colleges of pharmacy will hold a joint conference for the first time, and will discuss a systematic programme, drawn up by Professor Oldberg, for the elevation and unification of educational requirements throughout the country.

THE HIGHER EDUCATION.—An agitation for higher educational requirements in pharmacy has been entered into in America. This fact has been patent at many of the recent annual gatherings of the State pharmaceutical associations. The President of the Maryland Association, for instance, declared in his annual address that his State, like New York, Pennsylvania, and Wisconsin, ought to enact a graduation-requirement law. He believed a high-school education should also be demanded as a preliminary; and the high-school requirement was likewise insisted upon in the report of the Executive Committee of the Pennsylvania Pharmaceutical Association. In both New Jersey and Minnesota it was voted to secure pre-requisite legislation, while in Nebraska the Board of Pharmacy has been called upon to "stiffen" its examinations.

EDUCATIONAL CONFERENCE.—The joint annual meeting of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties is to be held at Indianapolis in September, and the programme and order of business have already been published. The number of delegates from each body is not limited, but each board and school has but one vote upon any question. Pending amendment of existing State laws regulating pharmacy, the Congress will strive to adopt some definite and reasonably satisfactory general principles and minimum requirements acceptable to the majority of pharmaceutical bodies. The programme lays down the age of seventeen years and a preliminary general education of one year's satisfactorily completed high-school work as the minimum prerequisites to practical pharmaceutical experience or apprenticeship, the same to be also the minimum prerequisites for admission to schools of pharmacy. It is suggested that a syllabus of pharmacy examinations should be prepared by a committee of the Conference with a view to attaining uniformity in the courses of instruction in pharmaceutical schools. Definite and uniform conditions of efficiency, relating solely to matters directly affecting the character of their educational work, should be adopted in order to receive official recognition by Boards of Pharmacy. In determining the fitness of candidates for a licence to practise pharmacy, all important facts of his educational history, practical experience, and technical services should be taken into account, and each assigned an appropriate value. Substantial credit for any satisfactorily completed courses of education in pharmaceutical schools should be given to each candidate. Graduates of recognised schools of pharmacy would be exempt from the Board examinations except in prescription-reading and dispensing. Sufficient practical experience in a pharmacy independently of courses of study should be required by the laws and rules of the Boards of Pharmacy.



## Canadian Notes.

**RADIUM.**—Messrs. Arthur J. Lippens, London; H. M. Lippens, Paris; and A. Fieux, a French engineer, have found radium in the mica district around Murray Bay.

**THE RECORD.**—It appears that George A. Letellier, a recent candidate at the Preliminary examination of the Pharmaceutical Association, received 170 points in English instead of 70, as at first reported. He consequently has passed on all subjects with a total of 790 points, this being the highest obtained by any candidate.

**A REMARKABLE CHARGE.**—Agnes Bridant, a young married woman, of Toronto, died on July 20 as a result of taking a certain medicine, advertised and sold by the Devoss Medicine Co., 210 Queen Street East, Toronto. The manager of this concern has been arrested on a charge of murder. Blood-poisoning was the cause of the woman's death, and a good deal of interest is taken in the outcome of the trial.

**THE RECENT SHIPPING DISASTER,** resulting in the loss of the *Chehalis* in British Columbia waters and the drowning of ten persons, was one of the worst accidents which has occurred in those seas. Among the drowned were several prominent men, including Dr. W. A. B. Hutton, formerly Registrar of Manitoba Medical College and recently surgeon on the Anglican Mission boat *Columbia*, plying up the northern coast. Dr. Hutton was an expert chemist, and had made a special study of oyster-culture. The trip on which the doctor was drowned was one taken for organisation-purposes, it being the intention to form a company to exploit the oyster-beds which Dr. Hutton had planted.

**A NEW PRESERVATIVE.**—Drs. De Martigny and Loir, of Montreal—the latter of whom is a French bacteriologist who recently went to Canada to do research work for the Dominion Government—are engaged in preparing a chemical for the preservation of meat, particularly for the bait used in catching cod. This idea is not a new one to either of these medical scientists. Both have been working on independent lines for years. In 1893 Dr. Martigny conceived an idea of sterilising meat without impairing the taste, and his researches have been fairly successful. Dr. Loir had already succeeded in sterilising fish by an almost similar process. By his discovery Dr. Martigny claims that minnows and other small fish used as bait can be preserved indefinitely, which, if satisfactory in general use, will be a discovery of great importance to fishermen, especially to cod-fishers.

**ANNUAL MEETINGS.**—The various pharmaceutical associations in Canada have been holding their annual meetings during the past few weeks. The gathering of the New Brunswick Pharmaceutical Association took place at St. John on June 20. The annual reports show that the Association is in a prosperous condition with a surplus of about \$800 in hand.—The Nova Scotia Pharmaceutical Association met at Lunenburg on June 27.—The annual meeting of the Prince Edward Island Pharmaceutical Association was held at Charlottetown on June 12, the Secretary-Registrar's report showing the Association to be in a sound financial position.—The annual meeting of the Pharmaceutical Association of Quebec has already been noted (*C. & D.*, July 28, p. 113), as well as that of the British Columbia Pharmaceutical Association (*C. & D.*, July 7, p. 9).

**NEW QUARTERS.**—On October 1 the new premises of the Montreal College of Pharmacy, on the corner of Manee and Ontario Streets, will be opened. The building was formerly Bishop's College, and it has been altered and refitted for its new work. The ground floor is occupied by the board-room, a large assembly hall, and the office of the Secretary-Treasurer. On the second floor are the lecture-rooms for chemistry, materia medica, and botany, and two laboratories—one for the students of each language, French and English. There will be accommodation for about a hundred students. The present staff of the College consists of Mr. David Watson, President; Mr. W. H. Chapman, Vice-President; Mr. E. Muir, Secretary-Registrar; and the teaching staff—Mr. John E. Morrison, professor of materia medica and botany; Mr. Joseph Bemrose, professor of chemistry and botany; Dr. A. Duval, professor of chemistry; and Mr. Edmond Giroux, professor of materia medica. Lessons are given both in English and in French.

**MR. ISAAC T. LEWIS**, who, after eighteen years of faithful service, recently resigned the position of Registrar-Treasurer of the Ontario College of Pharmacy, began his connection with the drug-trade as an apprentice with Mr. John Jane Smith, of Plymouth, says the "Canadian Druggist." When this business was sold to Charles Fox Hinton, Mr. Lewis became a partner under the firm name of Charles Fox Hinton & Isaac Thomas Lewis, wholesale druggists and drysalters. In 1853 Mr. Lewis followed Horace Greeley's advice and went to Canada, settling in Toronto, and shortly afterwards became a partner in the old-established firm of E. Hooper & Co. He left this firm to become manager for Messrs. Kerry Bros. & Crathern, and, when this business was sold, re-entered the retail trade, opening a drug-store in Toronto. He retired some years later, and in 1888 became Registrar-Treasurer of the Ontario College, a position which he has filled with the greatest satisfaction from that time to this. He will be greatly missed by all with whom he came in contact.

## India and the East.

(From "C. & D." Correspondents.)

**PASSED.**—The number of students who passed the qualifying examinations for pharmacist at Tokio during the first session this year was forty-nine.

**ON THE ROAD.**—The latest addition to the travelling staff of Messrs. Parke, Davis & Co. in India is Mr. Irwin Munro, who leaves Mr. J. Bliss, of Quetta, to join the Detroit firm.

**CHINA PEPPER FOR RUSSIA.**—The Russian transport *Petronia*, which arrived at Ceylon on July 7 from Vladivostok, discharged at Colombo 205 bags of China pepper for transshipment to St. Petersburg and Copenhagen.

**WANT A LAB.**—Hitherto there has been no municipal chemical laboratory in Osaka, but the City Council have now passed a Bill to erect one at a cost of 20,000 yen, and an additional 10,000 yen has been voted for instruments and apparatus.

**EXTENDING OPERATIONS.**—At a meeting of proprietors of patent medicines held at Osaka on June 22, it was decided to form a guild for the purpose of extending the market for their articles to Manchuria, China, and Korea. Sixteen proprietors were represented at the meeting.

**SALE OF QUININE.**—Revised rules for the sale of quinine at post-offices have been issued by the Indian Government. The stock of quinine held by postmasters of small offices being unduly large, the number of packets held as a permanent advance at branch offices has been reduced from seven to three.

**ALCOHOL IN JAPAN.**—According to recent statistics, the amount of alcohol used in Japan in the first three months of this year was 1,249 koku (1 koku = 39½ Imp. gals.) for medical purposes, and 11,663 koku for industrial purposes. The amount of alcohol imported into the country during the same period was 2,246 koku.

**OPIUM-REVENUE.**—The latest opium-revenue returns show that the sale of Bengal opium to the end of July has given a result of Rs. 2,836,000 better than the estimate, but the sale of Malwa opium to the end of June is nearly seven lakhs below the estimate. The net result therefore is an increase of 21½ lakhs on the Budget estimate.

**SCARCITY OF QUININE IN COLOMBO.**—As a result of the fever epidemic in Colombo and the neighbourhood, there was a scarcity of quinine during July. Even the bigger dispensaries in the Fort only had a sufficient stock for dispensing prescriptions. The death-rate continues to rise at an alarming rate owing to the prevalence of dysentery and enteric.

**THE NEW JAPANESE PHARMACOPŒIA**, which has been in course of preparation for a long time, has been completed. Dr. Nagai, the Chairman of the committee, has submitted the finished product to the Minister of the Interior, so that the third edition of the *Pharmacopœia Japonica* will be published in the near future. Among the alterations in the new issue will be the abolition of Chinese characters which have hitherto been used: all the names of the drugs and chemicals will be translated into Japanese characters only. Foreign chemical preparations that have been patented under various names are now excluded.



## Colonial and Foreign News.

**COUNTER-PRESCRIBING IN GERMANY.**—It has been decided by the Mecklenburg Upper County Court, at Rostock, that a pharmacist who chooses a remedy for a disease named to him, from several medicaments allowed free retail sale, and sells it with directions for use, exercises no medical power.

**NEW EDITION OF THE GERMAN PHARMACOPOEIA.**—Mr. Bumm, the President of the Imperial Health Office and President of the Imperial Board of Health, has issued a notice stating that the special committees of the Imperial Board of Health, in conjunction with the Imperial Health Office, will shortly start preparations for a new edition of the German Pharmacopœia. Pharmacists are invited to send suggestions.

**SUGAR GOODS FOR HOLLAND.**—From August 1 certain new duties on articles containing sugar imported into Holland have been exacted, and included among them are medicines prepared with sugar [other than medicines included under the head of "small wares" (*kramerij*)], the duty being 13.5fl. per 100 kilos. when the proportion of sugar exceeds 10 per cent., but not 50 per cent., and 27fl. when the amount exceeds 50 per cent.

**GERMAN PHARMACEUTICAL SOCIETY.**—The annual report of the Deutscher Apotheker Verein, to be presented to the meeting at Dortmund, refers at some length to the scarcity of assistants and the proposed employment of women assistants. At last year's meeting the President was asked to ascertain whether the diploma of the higher-grade girls' school, supplemented by a special examination in Latin, would suffice for women entering pharmacy. He applied to the Ministers of Prussia, Bavaria, Wurtemberg, Saxony, and Hesse. Only the Wurtemberg Minister has sent a favourable reply. The report mentions that Fräulein Helen Lange, President of the Society for the Advancement of Women's Education, has addressed a petition to the President of the Society, thanking him and suggesting that women should be admitted to pharmacy exactly on the same conditions as men. The report states that the new regulations regarding the training of assistants, which necessitate a longer attendance at college, explain the falling-off in the number of young assistants, and that probably there will not be such a scarcity next year. Among other subjects to which the report alludes is the importation of medicaments from abroad. The new Customs tariff, which came into force on March 1 this year, has made the import of finished medicaments from abroad far more difficult, and will stem the inflow of foreign specialties—secret remedies especially. The trade in Lysol is also alluded to, and the report, after referring to analyses of new remedies, specialties, and secret remedies by Professor Thoms, deals with the Society's speciality scheme, to which full reference was made in the *C. & D.* summer issue. The Society's membership has grown during the year from 3,702 to 3,867.—The report of the subsidiary body, Handelsgesellschaft Deutscher Apotheker m.b. H., which manufactures specialties, shows for the first half of 1906 net profits amounting to 169,144.95m., which is distributed as follows: Profit paid to members, 144,366.13m.; written off, 5,000m.; percentage and bonus to staff, 3,785m.; and carried forward, 15,993.82m. The half-year's returns are almost as much as for the whole of 1905. The speciality stores in Berlin, Cologne, and Munich have been enlarged to meet the requirements, and the trade in chemicals will be further extended. A laboratory will be opened to test the chemicals.

## Births.

**BOYD.**—At Gowanbrae, Blair Street, Kilmarnock, on August 2, the wife of W. G. Boyd, chemist and druggist, of a daughter.

**MACMANUS.**—At Mervyn, The Hill, Monkstown, co. Dublin, on August 6, the wife of Geo. H. C. MacManus (resident Irish representative of Southall Bros. & Barclay, Ltd., Birmingham), of a son.

## Marriages.

**CORKE—STEPHENS.**—At the Albion Congregational Church, Southampton, on August 9, by the Rev. J. Startup, Harry Malcolm Corke, chemist and druggist, R.N. Hospital, Plymouth, to Evaline Annie, eldest daughter of Mr. E. J. Stephens, of Woolston, Southampton.

**SIMPSON—CARDER.**—At the R.C. Church, St. John's Wood, on August 4, J. Simpson (manager of the drug department, A. W. Gamage, Ltd., Holborn) to Minnie, eldest daughter of Mr. and Mrs. Carder, of 12 Rothwell Street, Primrose Hill, N.W.

**TIDY—RAMSAY.**—At All Saints' Church, Margaret Street, on July 28, by the Rev. Canon Wm. Page Roberts, assisted by the Rev. J. F. Mather, Henry Letheby Tidy, son of the late Dr. Meynott Tidy, to Elska, only daughter of Sir William Ramsay, K.C.B., F.R.S., of University College, London, and Lady Ramsay, of 19 Chester Terrace, Regent's Park.

## Deaths.

**CRITTEN.**—At Southwold, on August 5, Mr. Robert Pier-son Critten, chemist and druggist, aged sixty-three. Mr. Critten had carried on business in High Street, Southwold, for forty years. He leaves a widow and nine children.

**FISHER.**—At St. George's House, Norwich, on August 6, Mr. Robert Fisher, managing director of Fisher & Co., Ltd., wholesale druggists, of 14 Calvert Street, Norwich. Mr. Fisher was for many years a member of the Town Council.

**FRITZSCHE.**—At Marienbad, on July 26, suddenly, Mr. Hermann Traugott Fritzsche, senior partner of the firm of Schimmel & Co., Miltitz, near Leipzig. After serving his apprenticeship in the wholesale drug-business and studying business-methods in England and France, Mr. Fritzsche entered the business of his father, whom, with his brothers, he succeeded. Under his able management and grasp of detail the business rapidly developed until to-day the firm of Schimmel & Co. is looked upon as one of the leading factories in Germany. Much of his leisure was devoted to the welfare of his employés, and the dwelling-houses which he had built for them are models of their kind. He was also instrumental in furthering the provisions which now guard German workers from want in sickness or old age, and the King of Saxony subsequently created him a privy commercial councillor in recognition of his services in welfare work. The surviving partners in the firm of Schimmel & Co. are the brother of the deceased, Ernest, and his son, Karl Fritzsche.

**GIBB.**—At Winchester, on August 1, Mr. William Duirs Gibb, chemist and druggist, aged sixty-three. Mr. Gibb, who was an ex-councillor of the city, had for many years up till 1897 carried on a mission hall at his own expense; and before his sermon at the cathedral on Sunday morning last Canon Braithwaite referred briefly to the loss the city had sustained by his death.

**GOODIER.**—At Oakdene, Grimsargh, on July 29, Mr. J. Goodier, druggist, of Preston, aged forty-eight.

**GOODWIN.**—At 36 Vanbrugh Park, Blackheath, S.E., on July 28, Mr. George Ebenezer Goodwin, chemist and druggist.

**OMBLER.**—At Glen Rynie, The Valley, Scarborough, on August 1, Mr. William Ombler, chemist and druggist, aged seventy-five. Mr. Ombler was formerly in business at Market Weighton, and when he retired in 1883 took up his residence in Scarborough. For ten years he was a warden of the Scarborough Amicable Society, retiring from office twelve months ago. He held office at the time of his death in the Old Globe (No. 200) Lodge of Freemasons.





## British Association.

By a C. & D. Contributor.

THE British Association was founded in 1831, principally through the efforts of the Yorkshire Philosophical Society, which issued the invitations to the first meeting. The stimulus to which we owe the foundation of the Association was probably the discovery of the vast collection of bones of extinct animals in the Kirkdale Cave in 1828, since this led to the building of the York Museum, under the auspices of the Yorkshire Philosophical Society, and no doubt the chance of seeing this fine collection of geological remains was the reason why the first meeting of the Association was so largely attended by naturalists and was so successful.

York offers attractions to visitors of all types. It has many ancient buildings, including even Roman and Celtic remains, which are a source of unflinching interest to the archaeologist and antiquarian. It has been the scene of many happenings, which have become part of the history of the country. Though not so rich in churches as formerly it is still a "city of churches," and is dominated by the venerable Minster, built in the thirteenth and fourteenth centuries. The city wall is still intact, and a walk around it reveals many "quaint bits" of architecture in the form of ancient city gates and ruined towers and abbeys. But York does not entirely exist on its past, being, as everybody knows, a centre of a number of important industries such as flour-milling, glass-bottle-making, and confectionery-manufacture.

The headquarters of the Association on the present occasion were located in the Exhibition Buildings, which include a large hall in which the presidential and evening discourses were delivered and where the two soirees given by the local reception committee were held. This hall has exits leading into the museum gardens, which, on the occasion of the soirees, were beautifully illuminated with fairy lamps.

Beyond this official hospitality garden parties were given by the Sheriff of York and Mrs. Bentley, the Archbishop of York and Mrs. MacLagan, the Council of the Yorkshire Philosophical Society, and by Messrs. Rowntree. The last-mentioned appeared to be attended by practically the whole of the members, who were shown over the cocoa and chocolate works and were later taken in brakes to the firm's model village at Earswick. Each member received on departure a souvenir of the visit in the form of samples of Messrs. Rowntree's attractive wares. On Saturday, August 4, members had a choice among a dozen excursions to places of interest in the neighbourhood, such as Ripon and Fountains Abbey, Ilkley and Bolton Abbey, Scarborough, Harrogate, etc.

Throughout the week members were invited to visit the works of the York Glass Co., Rowntree & Co., Perry & Co., the gardens of Jas. Backhouse & Co., and many availed themselves of these privileges. Those interested in electrical machinery were specially invited to see the new ozonising plant in operation at Messrs. Beetham's flour-mills, by which flour is bleached to a pure white, and is at the same time deprived of certain constituents, which prevent its keeping sweet in damp, tropical climates. The existence of this ozonising plant in York was a pleasant surprise to many of the members, who had only heard of the ozone treatment of flour being carried out in France.

Nothing very striking in the way either of addresses or papers was delivered at the York meeting, though a good deal of interest was aroused in papers read in the sections devoted to education, economics, geography, and engineering.

The sectional meetings were held in school-rooms and meeting-houses in various parts of the city, and in order that members might readily find the meeting-places of their particular sections the city was extensively billed with "hands" pointing out the ways to the various sections. These bills seem to have made a great impression on "the man in the street," and during the week his favourite greeting on meeting an acquaintance was, "What's your section, Bill?" To this the appropriate answer was, "Beerology, it meets at the Red Lion."

Another British Association custom is to hang out a placard in front of each sectional meeting-place bearing the legend, "The paper now being read is," with a space in which the title may be written. These blank spaces were ingeniously utilised by a local wag, who one day inscribed the name of a London halfpenny daily (the *Daily Mail*) on the placard in front of the Education Section. A local tradesman, who passed that way, seems to have taken the joke seriously, for he remarked to a friend that he thought that "the Education Section might have taken in a penny paper, any way." At two o'clock on Thursday, August 2, when the president of the Chemical Section was about to deliver his address the sectional placard bore the announcement "The paper now being read is

### 'SKETCHY BITS.'

This section met at St. Peter's School, Bootham, under the presidency of Professor W. R. Dunstan, F.R.S. In his presidential address he said that a sectional President has a great range of subjects to choose from in selecting a topic upon which to address his fellow-members. He may, as is customary, deal with the branch of research-work in which he is specially interested, or, again, he could discuss some phase of the apparently insoluble problem of education, or he might give an account of progress in some branch of chemistry of topical interest. Professor Dunstan, however, departed from the customary lines by dealing with a subject of immediate importance—viz., the application of science, and especially chemistry, to the development of the resources of the Empire. He then directed attention to the fact that a considerable share of the export and import trade of this country is done with the Crown Colonies, and as this trade is, on both sides, largely in British hands, there is some ground for Imperial aid being given to its development. Something had been done in this way already by the establishment of botanic gardens and experimental stations in some of the Crown Colonies, which are supported by Imperial grants-in-aid; but the time has come when this work should be extended, especially on the chemical side, and systematised, so that the fullest benefit may be secured from it. Passing reference was made to the excellent work done by Harrison in British Guiana, Watts in the West Indies, Bamber in Ceylon, and by other Colonial chemists; but it was pointed out that such establishments as exist in the Colonies are not at all commensurate with the corresponding institutions in the Dutch, French, German, and American Colonies. The necessity of having a well-organised central institution located in the United Kingdom for systematising and extending, especially on the commercial side, the results obtained locally was then touched on, and it was pointed out that the Imperial Institute, which is the central institution so far as chemical investigations are concerned, receives at present no support from Imperial funds, though its work consists largely in making British consumers acquainted with Colonial products, and thus benefits the British trader and manufacturer, as well as the Colonial producer. Professor Dunstan went on to say that, in order to illustrate some phases of the work done at the Imperial Institute, a series of papers would be contributed to the Section dealing with the progress made recently in the investigation of a number of natural products of great importance to British industry. In the first place, Mr. Pickles, of the Imperial Institute, would read a report on recent developments in the chemistry of rubber, and a paper would also be submitted on the same subject by Professor Harries, of Kiel. It was pointed out that substantial progress has been made recently in this subject, and it is possible that ere the British Association again meets at York the synthetic production of rubber on a commercial scale will be an accomplished fact though probably, owing to the extent to which rubber will by that time be cultivated, the factory-production of synthetic rubber may never be seriously entertained. Allusion was then made to gums, which are of some local importance in a confectionery centre such as York. It was announced that Mr. H. H. Robinson would contribute a report on the present position of the chemistry of gums, and a paper on a new Indian gum (*Cochlospermum Gossypium*) which spontaneously hydrolyses in damp air, evolving acetic acid.



# Scientific Progress.

Temperatures under this heading are on the Centigrade scale.

**Surinam Copaiba.**—Van Itallie and Nieuwland ("Arch. d. Pharm.," 1906, 161) have carried out a full investigation on Surinam copaiba. The resin, separated from the essential oil, was found to have an acid-value 171 and a saponification-number 177.5, so that it is practically free from esters. From this resin the authors obtained a small quantity of a crystalline body which appears to be a sesquiterpene alcohol. It melts at 114° to 115°, and on treatment with formic acid yields a sesquiterpene having the following characters: Sp. gr., 0.952; boiling-point, 252°; optical rotation, -61.7°; refractive index at 15°=1.5189.

**Crocetin.**—Decker ("Chem. Zeitung," 1906, 18) has extracted a body from saffron which he claims is the chief colouring-principle of the drug. He obtained it in amorphous flocks which had so ready a tendency to resinify that it was not possible to obtain them in a crystalline form. The ammonium salt, however, was obtained in a crystalline condition. The resin-free colouring-matter, which he terms "crocetin," was dissolved in a dilute solution of soda at 60° to 70° C., and solution of ammonium carbonate added. When the solution is allowed to cool the ammonium salt separates out as yellow needles. They are easily soluble in alkaline solution, but only very sparingly in water or alcohol. Analysis gave the following results: C=64.60 per cent.; N=8.06 per cent.; H=8.70 per cent.; O=18.64 per cent.

**Antimony Tartrate.**—Bougault ("Jour. de Pharm. et de Chemie," 1906, 465) has shown that when oxide of antimony is dissolved in excess of a solution of tartaric acid, and the evaporated residue is extracted with acetone in order to remove excess of tartaric acid, there is obtained an anhydride of tartro-antimonious acid, C<sub>2</sub>H<sub>3</sub> SbO<sub>4</sub>, corresponding to the hydrated tartar emetic. When dried, moreover, in the air for twenty-four hours it retains practically one molecule of acetone (16.5 per cent., as against 17.8 theoretical). If washed with alcohol instead of acetone, some esterification goes on. In order to procure the pure ethylic ether, Bougault dissolves 15 grams of the tartaric acid in 200 c.c. of alcohol; 5 grams of the tartro-antimonious anhydride is added, and the mixture well shaken at intervals for twenty-four hours. The liquid is filtered and allowed to stand. Esterification takes place slowly, and the more insoluble ether is gradually deposited. At the end of eight to ten days a crop of crystals may be collected, and on analysis these are found to be practically pure ethyl ether of tartro-antimonious acid.

**Detection of Glucosides in Plants.**—Bourquelot describes in the current number of the "Journal de Pharmacie" a method for the detection and characterisation of glucosides in plants. It consists in plunging the roughly powdered material into boiling alcohol and continuing the boiling for eight minutes. The alcoholic solution is then decanted, the solvent distilled off, and the residue extracted with water saturated with thymol. The solution thus obtained is cleared in the usual way with lead acetate, followed by sulphuretted hydrogen, and the optical activity of the cleared liquid determined in the polarimeter. Emulsin is then added to a portion of the liquor, and the mixture kept for twenty-four to forty-eight hours at 30°, after which it is filtered and its optical activity re-determined. If a glucoside is present, the glucose liberated by the action of the emulsin on it makes a considerable change in the activity of the liquid; and where a known glucoside is present it is frequently possible, by calculation from the change in activity, to identify the glucoside. Working in this way, the presence of new glucosides has been detected in several plants, notably *Colchicum autumnale*, *Fragaria excelsior*, *Strychnos potatorum*, *Digitalis purpurea*, *Valeriana officinalis*, *Viburnum Tinus*, and *Taxus baccata*.

## Conundrum Column.

### The Last Prescription.

THE prescription given in the Summer Number (p. 190) was written by an Italian medical man. The response has not been large, showing that chemists do not come across many Italian prescriptions. The following is a transcription of the script:

Unguento semi freddi ...	gram. 40
Ossido di zinco ...	gram. 4
Acido tannico ...	gram. 4
Fiori solfo ...	gram. 3
Essenza menta ...	gocce numero iv.

Mescolare. Uso esternamente.

The first ingredient (cold-cream) was a stumbling-block to many of the competitors, but it is named in the Italian Phar-

macopœia under the monograph on pomata con olio di mandorle, which is the official recipe for cold-cream. Semi in this case means half, and not seeds as some contributors had it; freddi is Italian for cold. The second ingredient is not difficult when one remembers that ossido is Italian for oxide. Every competitor made out acid tannic. Fiori solfo is flowers of sulphur, and presented no difficulty except to one bold person, who translated it as ferri sulph. The last ingredient is essential oil of peppermint, although many postcards simply put it down as essence of peppermint. It should be recollected that the English-speaking races are peculiar in including in their Pharmacopœias spirituous solutions of volatile oil under the name of essences. Continental Pharmacopœias almost all indicate volatile oils as essences. Many competitors were disqualified on this one point only.

The awards are as follows:

Five shillings to Mr. R. JOHNSON, c/o Mr. J. R. Marten, 40 London Road, Brighton, for the first correct translation.

Five shillings to Mr. Merli Mario, Farmacia Mazzo, Parma, Italy, for the first correct transcription from abroad.

Two shillings and sixpence each to Mr. C. S. ASHTON, 46 Dyke Road, Brighton, and Mr. W. B. FALDING, 4 Bonnevill Road, Clapham Common, London, S.W.

### For Next Week.

During the summer holidays many readers will have a few minutes' leisure in which to decipher the following prescription. As the script is one which is common in British and Irish pharmacies, we do not expect that it will prove so difficult as the last exercise. Assistants and apprentices are equally eligible to compete, and should bear in mind that the educational value of such exercises is considerable. Postcards should reach the office of THE CHEMIST AND DRUGGIST not later than Tuesday, August 14.

Handwritten prescription in cursive script, likely Italian, listing various ingredients and their quantities. The text is difficult to decipher due to the cursive style, but appears to include items like 'Unguento semi freddi', 'Ossido di zinco', 'Acido tannico', 'Fiori solfo', and 'Essenza menta'.

THE KIND.—Customer: "Give us some talcum powder, please." Clerk: "What kind—Mennen's?" Customer: "No; women's."—*Pacific Drug Review*.



## Observations and Reflections.

By XRAYSER.

### The Knighthood

conferred on Sir William Perkin is but a slender reward for opening to the world the rich treasury of colours which for myriads of centuries had been locked up in the despised refuse of tar. Henley and Ascot, Goodwood and Cowes, Hyde Park and the Champs Elysées owe their modern kaleidoscopic attractions to that chemist's researches. A "society" summer function deprived of its aniline-tinted ribbons and sashes and sunshades would now startle us by its gloom, and a group of woad-painted warriors from Boadicea's army, or a vanful of Roman Emperors robed in togas of Tyrian purple would not much relieve the dinginess. Sir William Perkin may not be flattered to know it, but it is true that no one has ministered more effectively than he to the lust of the eye in Vanity Fair. And if there had been

### An Advocatus Diaboli

at the banquet last week he might have added worse things to that charge. Is not Sir William primarily responsible for the desolate madder-fields of France and Holland, and for the cruel and hopeless fight which the poor Hindoos are now waging for the maintenance of their long-cherished indigo-cultivation? Perhaps, worst of all to some minds, it is to the discovery of fifty years ago that Germany owes the supremacy in chemical-industry which she appears to have established so firmly. In 1862, when Perkin's success was new, his famous chemistry teacher, Hofmann, foretold that at no distant date, instead of spending millions a year for dye-stuffs, England would become the greatest colour-producing country in the world, and would be sending blues to indigo-growing India, distilled crimson to cochineal-laden Mexico, and fossil substitutes for quercitron and safflower to China and Japan. How accurately that prophecy has been fulfilled, though unfortunately not by England, history will tell.

### Sir William Perkin

was a very youthful discoverer; perhaps the youngest great discoverer on record. He was only eighteen when he produced his mauve dye experimentally, and two years later he was manufacturing it on a commercial scale. He brought his early samples to the notice of Pullars, the dyers, and they assured him it would be a success if the cost were not too high. It is pleasant to note that Sir Robert Pullar was one of the speakers at the jubilee celebration. The pretty name mauve which everyone was soon using was not originated by Mr. Perkin. It was the French form of *malva*, the mallow, and had indeed been used occasionally to describe the purple lines in the petals of those flowers. Marie Antoinette had a "ruban mauve." Mauve and "Uncle Tom's Cabin" are almost inseparably associated in many English recollections as contemporary sensations. It cannot be doubted that Perkin's discovery was the most important ever made in the ancient

### Art and Industry of Dyeing.

But the records of this art and industry abound in events of world-famous history. All the ancient nations—the Greeks, curiously, least of all—were fond of colours and adepts at dyeing. Moses tells of a tola or worm-dye, rendered in the Bible "scarlet," which was probably the Arabic "kermes," the Eastern cochineal. Homer wrote of Andromache depicting flowers of various colours on her tapestry. Her "growing work" at the

"melancholy loom" was, according to Pope's translation, "spotted diverse with intermingled hues." But Tyre became the dyers' city paramount. It flourished for at least fifteen hundred years with its purple, and may almost be said to have perished with it. Not that all the purple was made there. Lydia, the Pauline convert and "seller of purple," came from Thyatira, which was in the neighbourhood of Smyrna, hundreds of miles from Tyre. The famous Tyrian dye was obtained from a shellfish—one drop from each fish. It was, therefore, very costly, and, perhaps consequently, became fashionable. The trade was ultimately ruined by a too demonstrative Imperial patronage. It was all very well for the Roman Emperors to adopt it, but when they decreed that it should be reserved for their robes exclusively, Tyre was doomed.

### Scarlet

has always been a favourite colour, but it was a difficult colour to get brilliant enough. Giles Gobelin, a French dyer of the sixteenth century, made a great fortune by dyeing a better scarlet than any of his rivals. He found, or professed to have found, that the water from a dirty little stream called the Bievre, near Paris, enabled him to produce a more brilliant scarlet than he could get elsewhere, and he built a large dye-house on its banks, which was for a long time known as Gobelin's Folly. But he and his successors made great fortunes out of it, and the factory was ultimately sold to the Government, and is still the national museum of tapestry. A very important discovery was made by accident by a Dutchman, named Cornelius Drebbel, in 1630. He was one of the early workers on the microscope and the thermometer, and for the tube of the latter he had prepared an extract of cochineal which he set aside in his window. Above it stood a bottle of aqua regia, and this got broken, and some of it trickled into the cochineal, which then became a beautiful scarlet. But it cost Drebbel many more experiments before he ascertained that previous to the acid reaching the cochineal it had dissolved some of the tin of the window-casement. This was the origin of the employment of tin as a mordant for cochineal. Concerning cochineal there is a story that Linnæus hoped to raise the insect in Europe, and with this purpose in view had a nopal covered with the insects sent from Mexico to his home at Upsala. Linnæus was away when it arrived, but his gardener planted it, having first completely cleaned it from its vermin.

### Indigo

has been the object of statutory prohibition in England, France, and Germany. All these nations wanted to protect their native woads from the competition of this alien. The English Act was passed in Queen Elizabeth's reign, and was not repealed until the reign of Charles II. The dyers of Nuremberg were required to take an oath swearing not to use indigo in any form until some fifty years ago, though for a century and more the oath had become a mere formality.

### "Enemies of Science"

are to the faithful attendants at British Association meetings what ghosts and goblins and sea-serpents are to us Philistines. Professor Ray Lankester seriously tells his audience of "onlookers who declare to the public that science is at an end, its possibilities exhausted." If any such assertion has been made, its author is surely not worthy of refutation; if it has not been uttered, it is, to put it mildly, unscientific to invent it. But the suggestion appears to be that it is "enemies of science," ignorant or self-interested persons, who hold the view formulated for them as to the worthlessness of science, who resist the demands of Presidents of the British Association for fabulous drafts of public money. Sir Norman Lockyer three years ago proposed a lump sum of twenty-four millions. Mr. Lankester suggests ten millions a year. Sir Norman Lockyer wanted the money to endow chairs; Mr. Lankester wants it to encourage phagocytes. In either case the object is to provide a scramble for professors. These "absurdities of an unrestrained fancy," to adopt Mr. Lankester's expression, are not promoting the respect which we all wish to retain towards our appointed teachers.



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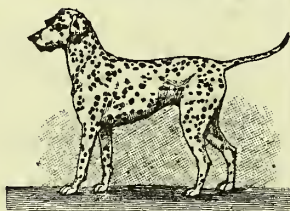
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## Editorial Comments.

### To "Know" and to "Do."

ONE of the reflections which naturally arise with the publication of our Educational Number is that as the years go by, and men who have played their part in pharmacy take some enjoyment of life outside their craft, young men come forward to whom the practice is new, and who attack the subjects of their examination with somewhat of the enthusiasm which characterised their pharmaceutical forefathers. The present-day conditions of qualification differ, but it was the few in the old days who volunteered to prove their qualification, while to-day everyone must prove his fitness to use the title "chemist and druggist" as an individual. Last week the President of the Pharmaceutical Society, commenting on the fact that in July 198 out of 323 Minor candidates failed to satisfy the examiners, said that he was "satisfied that the examination is not a too severe test for students who have had a good preliminary education and are well prepared." This platitude is open to comment and criticism, from the point of view of public policy, but we take it now as embracing the subject of these remarks—viz., the necessity, for success in the examination-room and in life, of knowing one's business thoroughly. There are various ways of knowing a thing. One may know it by memory, be able to repeat all about it word for word, and yet be as ignorant of it as a calf is of astronomy; one may know it theoretically, and yet have no practical acquaintance with it; or one may know it practically, and yet be quite unable to give a rational explanation of any of the facts involved. Let us take, for example, oleate-of-zinc ointment. Suppose the examiner in pharmacy asks how



this is made; there are four possible answers. There is the answer of the candidate who has committed to memory the Pharmacopœia details, but who knows absolutely nothing of the principles of the various processes, and who has never made the preparation himself or seen it made. There is the explanation of the student who can tell about the various chemical reactions, the decomposition of the soap and of the sulphate of zinc, but who has never made the ointment and has no practical acquaintance with it. Then there is the answer by the candidate who has been brought up in a laboratory and who has made this and other galenicals scores of times, and who knows so much about it in practice that he thinks it is superfluous to learn anything about it in theory. Lastly, and least frequently, there is the student who knows all about the ointment, both practically and theoretically—he has made it, and he knows the why and the wherefore of every detail of the process. The last is the only one who can be said to *know* oleate-of-zinc ointment; and though the others may have sufficient knowledge to satisfy the examiner, not one of them comes up to the ideal candidate.

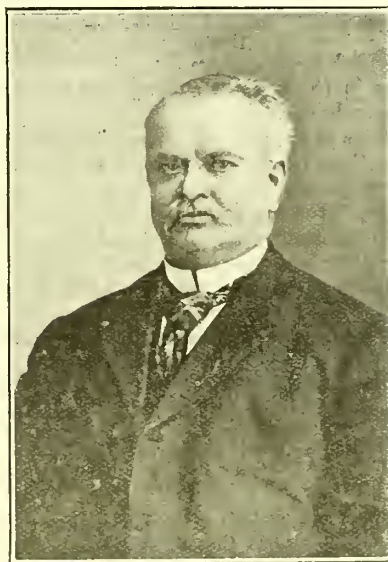
In order to know Minor subjects, the student—i.e., the chemist's assistant—must be thoroughly familiar with the Pharmacopœia. This familiarity ought not to be the result of three months' grind at a school of pharmacy, but of the three years or more of patient, earnest study during apprenticeship. The B.P. ought to be the daily companion of the apprentice, and by the time he is ready for specialised study he ought to know the composition of every official galenical, and a great many correlated facts that naturally branch out from his daily work. It is not necessary that he should at this early stage know all about the chemistry and the botany of the B.P., but he should have mastered all about the practice, and much about the theory, of making tinctures, pills, ointments, liquors, and other galenicals. He should, moreover, have improved his time by becoming familiar with all the drugs he handles from day to day, so that recognition comes as a matter of habit; and the details as to characters of drugs, and the interminable "tables" that the student is supposed to grind up, ought to be at the end of his tongue long before he reaches the "student" stage. Some full-blooded, high-spirited youths may consider that if their apprenticeship is to be one long grind, life will hardly be worth living, but all such may be reassured. What is here suggested is perfectly compatible with an evening's cricket in the week, assuming that the "hours" are suitable for that recreation. But it must be one thing at a time. When the apprentice or assistant is at work let it be work, and give up the habit of sending out the boy for the "latest edition" and spending valuable time in figuring out Hayward's average and proving that if only Kent can beat Yorks and Notts beat Surrey there will be a tie for the championship. The three years' apprenticeship, even under unfavourable circumstances, ought to lay the foundation for a vast amount of useful knowledge and be a preparation for the more strenuous mental discipline of actual student days.

If a pharmacist is to be successful in the examination and in after-life, he must not only "know," but he must be able to "do," his work. The ideal training implies both, but it frequently happens that the candidate comes up for examination who knows the theory of his subject, but who is entirely "at sea" when he is asked to apply his knowledge practically. This is even more apparent in the common details of pharmaceutical work than in the delicate manipulations demanded in the chemical laboratory, and it is quite easily understood why it should be so. There is always the presumption that a student knows something

about pharmacy, and few healthy young men care to appear more ignorant than they really are, hence they profess a good deal more than they ought to, with the result that they fail to reap the benefit that in other circumstances would have been possible. In chemistry, on the other hand, a young man is not supposed to be proficient when he enters college, and hence he is willing and eager to begin at the bottom of the ladder. It is essential that in every branch of knowledge the practical side should not be subordinated to the scientific and that the candidate should be as competent to make an infusion as to cut a microscopical section; while the accurate weighing of a quarter of a pound of glycerin is just as important as the weighing of a milligram of silver nitrate. It frequently happens that a candidate very brilliant in the chemical laboratory is poor in pharmacy, much more so than the reverse, for teachers can always ensure that a first-class pharmacist is also a good chemist. A candidate who comes up fully equipped in the practice of pharmacy, and thoroughly abreast in its theory, need fear no foe in so far as the Minor examination is concerned. All that he requires is that he should be himself. Many candidates break down from sheer nervousness, and a few assume an air of wisdom that Solomon might have envied. There is no occasion to display either abject humility or overweening confidence. Examiners are human, and they like a candidate to be natural, and to talk to them as one man to another. Possessing a knowledge of the subject, and the ability to *do* whatever "work" may be called for, the candidate will have a consciousness of preparedness and power that will go far to overcome any natural timidity, and to all such the Minor examination need present no terrors.

## American Education in Pharmacy

ONE of the subjects of a conversation we had last week with Dr. William Muir, of Brooklyn, N.Y., was the educational requirements now in force in New York State



WILLIAM MUIR, PHAR.D.

for registration as a pharmacist. These requirements are at the high-water mark of pharmaceutical qualification in the United States, and the preliminary conditions are such as to place pharmacy in a group with law, medicine, teaching, dentistry, and other professions as a pursuit for select-



tion by pupils in secondary schools. This means that pharmacy is placed under the New York Education Department, which is substantially the equivalent of our Board of Education, and a standard of accomplishment at secondary schools is fixed for pupils who may desire to enter pharmacy as a calling. At these schools proficiency is marked by "counts" which are obtained by attendance in classes and examinations by the Regents of the University. Perhaps forty counts are necessary as a preliminary to law, thirty for medicine, and fifteen for pharmacy. The Education Department for a 25c. fee issues a formal certificate to those who meet the standard, and with the pharmacy student certificate one may proceed to a pharmacy college or to pupilage with a pharmacist. This method of securing educational efficiency and testifying to it reduces the examination bugbear to a minimum and is working admirably; while it keeps pharmacy constantly before the pupils of secondary schools as a possible calling. Dr. Muir says that the standard for pharmacy students will be gradually raised. The subjects include English, Latin, Greek, French, German, Spanish, mathematics, science (natural and physical), history and social science, business subjects, and some others, certain of them being compulsory and others optional. The applicant must have fifteen "counts" before he gets a certificate for entering pharmacy. The striking feature about the requirement is that while minima are set for such subjects as English and arithmetic, the candidate has a catholic choice of subjects to make up the requisite "counts." The following three show the possibilities:

**GROUP III.—SCIENCE.**

5 Physics	2½ Elementary botany	5 Advanced zoology
5 Chemistry	2½ Elementary zoology	5 Physical geography
5 Biology	2½ Physiology and hygiene	5 Agriculture
	5 Advanced botany	

**GROUP IV.—HISTORY AND SOCIAL SCIENCE.**

3 or 5 Ancient history	3 or 5 English history	2 Civics
3 or 5 European history	5 American history	2 Economics
	with civics.	

**GROUP V.—BUSINESS SUBJECTS.**

4 Elementary bookkeeping	2 Commercial law	3 Stenography (50 words)
3 Advanced bookkeeping	3 Commercial geography	3 Stenography (100 words)
2 Business arithmetic		2 Typewriting

The figures in front of the subjects are the "counts" accredited in each case.

The provisions of the new law entrust the administration of pharmaceutical affairs to a Board of Pharmacy appointed by the pharmacists of the State. The governing principles are statutory, and they show that there are two grades in the State, viz., (1) licensed pharmacists and (2) licensed druggists, the latter grade being excluded from cities having a population of 1,000,000 or more, and none may carry on business except in places with less than 1,000 inhabitants. The conditions for registration as a pharmacist are:

1. Age: Twenty-one years.
2. Business experience: At least four years compounding, dispensing, and retailing drugs. One year of the five immediately preceding application for registration must be in a pharmacy in U.S.A. under a licensed pharmacist.
3. Education: A two years' course in a recognised pharmacy school.
4. Examinations: Those for the school diploma. If the candidate has not taken that during his terms, he must pass the Board's examination.

The licensed druggist must have three years' practical experience in pharmacy, and the licence is granted only to those whom the Board of Pharmacy consider fit. The "one pharmacist one pharmacy" principle prevails so far as management is concerned. The circumstances which led up to the codification and perfecting of pharmacy law in New York State, the abuses which were ended, and

the improvements which have been effected, have been referred to by us from time to time during the past three years, and it will suffice to say now that all who enter New York pharmacy after January 1, 1905, must conform with the conditions we have outlined. This naturally led us to ask Dr. Muir the question, How can a Minor man or an Irish licentiate be licensed as a pharmacist in New York State? To this he replied that the Board of Pharmacy has power to consider the cases of persons holding certificates of qualification issued by any State prior to January 1, 1905, and if the examination is equivalent the Board may accept the certificate without further examination or condition. This would be done in the case of the Minor and Irish Licence certificates, but the Board has discretionary power. In the case of those holding certificates issued since January 1, 1905, the Board would probably place the holders on a footing with graduates of the Ontario College of Pharmacy, who have the preliminary requirement allowed to them, and one year of the professional requirement, which means that the applicants must attend a college of pharmacy for another year before entering for the Board's examination. The schools of pharmacy under the New York State Education Department are Brooklyn College, New York College, Syrian Protestant College, Beirut, Albany College, and Buffalo College. The Board of Pharmacy recognises other American colleges fully or partially. The new regulations give the Board power to ensure that the four years' preliminary training, with two years' college course, is thorough (whereby the growth of foreign undesirables will be stopped), and the exclusion of licensed druggists from the largest cities ensures the best possible service to the public. Dr. Muir is a doctor of pharmacy of the Brooklyn College of Pharmacy. We asked him if it is possible for a British Major man to get this degree, and he thought there would not be much difficulty for applicants who can satisfy the College as to their training, for the power exists of waiving the requirement of attendance at the College courses in the case of persons who have had equivalent training.

It may be well to observe that while the conditions here outlined necessarily enhance the cost and increase the trouble of becoming pharmacists in New York State, there is compensation to those who qualify. None but licensed pharmacists and druggists may sell drugs, medicines, and poisons, or dispense medical prescriptions. The druggist may not start in business on his own account in any town containing more than 1,000 inhabitants, and where there is no druggist or pharmacist a licence from the Board of Pharmacy is required by a storekeeper who wants to sell medicinal simples—the range of which the Board specifies. Medical practitioners may not keep open shop as pharmacists, unless they are also pharmacists, and may only dispense medicines in emergencies. Hence the position and prospects of the pharmacist in that State justify the legal requirements—in fact, the latter are a rational effort to secure for the public pharmaceutical service superior to that which has been afforded hitherto.

## The Customs Revenue.

THE annual report of the Commissioners of Customs for the year which ended on March 31, 1906, gives more details than is usual regarding the collection of the revenue. It shows that the net revenue from Customs-duties, after drawbacks and repayments have been deducted, amounted to 34,484,820*l.*, which is 434,820*l.*, of 1.28 per cent., more than the Budget estimate for the year and 1,136,063*l.*, or 3.19 per cent., less than the net yield for 1904-5. The amount paid to the Exchequer in 1905-6 was 34,475,000*l.*, or 1,255,000*l.* less, the decrease being mainly due to the reduction in the



duty on tea. Taking the articles in the order in which they are given in the report, we find the revenue derived from cocoa increased by 5 per cent., to 273,100*l.*, a plentiful supply and lower prices having increased consumption. The quantity of cocoa-butter retained for home consumption and the net duty received were the largest since 1901-2, being 659,718 lb. and 2,753*l.*, respectively. Coffee also yielded a slight increase in duties, but the average declared import-value of raw coffee fell from 63*s.* per cwt. in 1904 to 55*s.* 5*d.* in 1905. The receipts from dried fruits were 7.49 per cent. more, owing to the fact that foreign importations were plentiful and cheap. As regards the duties from foreign spirit, the net receipts show a decrease of 97,839*l.*, or 2.56 per cent., as compared with 1904-5, following on a decrease of 635,936*l.*, or 14.3 per cent., in the preceding year. This is mainly due to a remarkable falling-off in the importation of foreign plain spirit, both for potable and for industrial purposes, the amount imported from Germany being 186,934 gals., against 338,836 gals. in 1904-5, while there were no importations of foreign spirit for methylating-purposes last year, the decrease having been continuous since 1902-3, in which year 1,196,167 gals. was imported for methylating. During the past five years wide variations have occurred both in the quantities imported and the average values of the imports of spirit from Germany, which variations are mainly governed by the quantity of potatoes available in Eastern Europe for conversion into spirit. Low prices ruled from 1901 to 1903, the imports in those years being 3,089,909 gals. and 1,808,769 gals. respectively; consequently spirits of this kind displaced home-made spirits to a great extent during those years. Now the position is reversed, as, owing to the advanced prices ruling in German spirit during the past two years, the British distiller has been enabled to hold his own at home, and hence the trade with Germany is almost at a standstill. The quantity of foreign spirits retained for home consumption again fell last year to 750,865 proof gals., yielding 477,290*l.*, or a decrease of 8.06 per cent. In the case of perfumed spirits there is little change—37,217 gals., yielding 33,900*l.*, having been imported, compared with 38,163 gals., yielding 34,707*l.*, in 1904-5. The net revenue from the sugar-duties reached the respectable total of 6,177,953*l.*, or practically the same as in the previous year. Included in this amount is 154,441*l.* duty received on account of sugared goods and saccharin, and 162,622*l.* for glucose, both these amounts being slightly better than the previous year. A feature of the sugar-duties is the fact that much more molasses was delivered on drawback or free of duty to the British distiller, this enabling him to manufacture cheap spirit. No less than 1,033,793 cwt. was delivered, compared with 932,985 cwt. in 1904-5. Most of it is of foreign and colonial make, and the quantities delivered for stock-feeding purposes even exceed the foregoing amounts. The revenue from tea has fallen in round figures by 1,700,000*l.*, this being entirely due to the reduction of 2*d.* in the duty, which came into force on July 1, 1905. Consumption, however, increases steadily, the amount per head of population being 6 lb. and the average value of imports is 7.24*d.* per lb. The revenue from tobacco produced 13,380,878*l.*, or nearly 1.5 per cent. more, this being considered satisfactory; while the revenue from wines continued to diminish, although the rate of decrease exhibited in 1904-5 has been checked. Among the minor articles in which we are interested there was an all-round decline, the chief item being chloral hydrate, which dropped from 1,215*l.* to 1,060*l.* Acetic ether realised 209*l.*, butyric ether 487*l.*, sulphuric ether 131*l.* (55*l.* less), ethyl bromide 2*l.*, ethyl chloride 422*l.* (139*l.* less), ethyl iodide 1*l.*, and transparent soap in the manufacture of which spirit has been used declined by 23*l.*, to 77*l.* On sweetened con-

densed milk 69,211*l.* in duties was paid, while 47*l.* was obtained from Nestlé's milk food, 969*l.* from soy, and 66*l.* from tamarinds in syrup. A feature of the report this year is the information given in regard to the working of the Merchandise-marks Acts, 1887-1891. Special mention is made of an instance in which tooth-brushes of French manufacture consigned to Norway were marked "London." They were confiscated. In an appendix are given the number and description of imported goods detained under the Acts, and among the articles bearing names being or purporting to be of British manufacture were one consignment of absolute alcohol, two of antiseptic cream, eleven of bottles, two of bottle-stoppers, four of capsules, two of celluloid goods, six of chemicals, one of chloral hydrate, one of cosmetics, four of crucibles, three of dental cement, six of drugs, one of essential oils, one of malt extract, two of medicines, two of photographic apparatus, three of photopaper, and one of surgical appliances. Other articles bearing false trade descriptions as to the country in which the goods were produced included casein, glassware, perfumery, soda crystals, and vanillin; while four consignments of chemicals bore trade-marks purporting to be those of manufacturers in the United Kingdom. The total number of detentions under the Merchandise-marks Acts was 1,818, of which 768 were delivered as imported, 859 on removal or qualification of marks, 177 returned to port of shipment, and 14 seized.

#### The Byron Manufacturing Co.

We have received by the last Australian mail full particulars regarding Mr. W. W. Jhonson's doings in Australia a few years ago. What he has done here is a repetition of his practices in the Antipodes. We have placed the information in the hands of Mr. Kirby (Neve, Beck & Kirby, solicitors, Lime Street, E.C.), who is looking after the interests of members of the Chemists' Defence Association.

#### What are Cattle-salts?

This is a question which appears to have been troubling some chemists, so the "Anti-cutting Record," in its connection with the Chemists' Defence Association, says something about it. After extensive inquiries in many districts, it has been ascertained that the custom in many parts of the country is to supply Glauber's salts when cattle-salts are asked for. In some districts where this was formerly also the custom it has now become increasingly the practice to sell Epsom salts. This seems to be due to the fact that magnesium sulphate is now cheaper than sodium sulphate and more soluble. Our contemporary advises that when cattle-salts are asked for and sold by this name

the dealer should continue to supply what it has been the custom in his particular district to give, and should label it "Cattle Salts (Epsom Salts)" or "Cattle Salts (Glauber's Salts)" as the case might be; or, instead of putting within brackets the words "Epsom Salts" or "Glauber's Salts," the words "Sulphate of Magnesia" or "Sulphate of Soda" could be substituted.

We daresay something lies behind this advice regarding a comparatively humble article; doubtless some member of the C.D.A. has got into hot water through continuing the practice of his youth in supplying Glauber's salts. We have always understood that cheapness was the only reason why Glauber's salts were preferred to Epsom salts when the homely cow had to be dosed. In the "Diseases of Cattle" chapter in "Veterinary Counter-practice" magnesium sulphate alone is prescribed in saline laxative draughts for cattle. In one case where sodium sulphate occurs along with magnesium sulphate it is an "old-fashioned" remedy.



## College Notes.

**LEEDS COLLEGE OF PHARMACY.**—Mr. Pilkington Sargeant reserves a complete suite of rooms in this College for the use of lady students.

**NORTHERN COLLEGE OF CHEMISTRY AND PHARMACY.**—Mr. George Clayton, co-principal with Mr. Fred Lawson, B.Sc., of this Manchester school, informs us that during the past year students of the College have won the Manchester scholarship, a Fairchild prize, and the Pharmaceutical Society's bronze medal (awarded to Major men).

**SOUTH OF ENGLAND COLLEGE OF PHARMACY.**—Mr. H. Lucas, who is opening the house at 186 Clapham Road, London, S.W., as a school of pharmacy on September 3, informs us that the fitting-up of the place is proceeding well, and the arrangements for lectures, demonstrations, and laboratory practice are shaping nicely. He is devoting the garden attached to the house to the cultivation of plants appropriate for pharmacy students.

**LONDON COLLEGE OF CHEMISTRY, PHARMACY, AND BOTANY.**—Since the institution of this College, Mr. H. Wootton, B.Sc., the Principal, has had part of it for residential purposes, but recently he has thrown this part into the educational department, and after the vacation a new lecture-room will be used, besides three new chemical laboratories, others for pharmacy, histology, and physics, and separate provision for Preliminary students and women students.

**WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY.**—Mr. George S. V. Wills is now the *doyen* among pharmacy college principals, but is not yet growing many grey hairs—indeed, he has just given evidence of his vitality and faith in the future of pharmaceutical coaching by renewing the lease of the College for a further term of twenty-one years, including the premises on each side. Mr. Wills is also the principal of the Apothecaries' College for Ladies, 112 St. George's Road, Southwark, S.E.

**BIRMINGHAM AND MIDLAND SCHOOL OF PHARMACY.**—Since his establishment of this school a few months ago, Mr. W. J. Moylan-Jones has got everything into thorough working order, and he is looking forward to a busy winter session. Before he started the school Mr. Moylan-Jones had quite a number of young chemists through his hands, who successfully negotiated the Minor. In this connection we may say that a brief paragraph in our Midland Notes a fortnight ago did not refer to the Birmingham and Midland School.

**METROPOLITAN COLLEGE OF PHARMACY.**—During the vacation Mr. C. Edw. Sage, the Principal, is having the College thoroughly overhauled and redecorated as far as is necessary. Several alterations are also being made, including the equipment of a bacteriological department, and a private research-laboratory. Mr. Sage has just published a series of booklets on the different departments of his College. The latest to be issued are on evening tuition for the Minor and Major, and on preparation for the Apothecaries' Assistants' examination. Both are interesting, and copies of either can be obtained free on application to Mr. Sage.

**LIVERPOOL COLLEGE OF PHARMACY.**—Mr. R. C. Cowley, Principal of this College, has been in the habit of giving his pupils a set of questions in all Minor (or Major) subjects, with a view to testing their progress, and especially to emphasise points which too frequently are dealt with indifferently in text-books although they are most important to students of pharmacy. We have had the opportunity of perusing some of these, and they appear to us to stimulate thought besides testing the student's progress. We think many non-collegiate students working privately would be glad of the opportunity of doing these test-papers. Perhaps Mr. Cowley will oblige.

**EDINBURGH ROYAL DISPENSARY SCHOOL.**—The prospectus of this school contains a remarkable list of "alumni," numbering over 1,200, who have qualified from the school during the twenty years Mr. William Duncan has directed it. We notice in the list the names of several pharmaceutical examiners, the President and the Secretary of a board of pharmacy, the Presidents of two pharmaceutical societies, and the Secretary of another, besides the names of a number of pharmacists who have done good work in research, and of several teachers in England and Scotland. They say in South Africa that to be a "Duncan's man" is to open the door to confraternity and success.

**GLASGOW SCHOOL OF PHARMACY.**—We had an interesting chat the other day with Mr. John Lothian, when he was passing through London on vacation bent, and in the course of it we gathered that, as principal of the Glasgow School, he is making an effort to meet the difficulty which some local students have in giving full attention to their studies in the evenings. In Glasgow, as in other industrial centres, a good deal of business is done then, with corresponding slackness in the course of the day, and Mr. Lothian is admitting night students in the afternoon for practical work. The College

equipment amply covers this facility, and employers are favouring the scheme. Further particulars can be obtained from Mr. Lothian.

## WHERE TO STUDY.

The following educational institutions are advertising in this issue:

- School of Pharmacy, 17 Bloomsbury Square, W.C.
- Muter's South London School of Pharmacy, 325 Kennington Road, S.E.
- Westminster College of Chemistry and Pharmacy, Ltd., Trinity Square, Borough, S.E.
- Metropolitan College of Chemistry, 160-162 Kennington Park Road, S.E.
- London College of Chemistry, Pharmacy, and Botany, 323 Clapham Road, S.W.
- Brixton School of Pharmacy, 78 Stockwell Park Road, S.W.
- South of England College of Pharmacy, 186 Clapham Road, S.W.
- Liverpool School of Pharmacy, 6 Sardon Terrace, Upper Duke Street, Liverpool.
- Manchester College of Pharmacy, 225A and 227A Oxford Road, Manchester.
- Northern College of Pharmacy, 100 and 102 Burlington Street, Manchester.
- Birmingham and Midland College of Chemistry, 45 New-hall Street, Birmingham.
- Leeds College of Chemistry, Clarendon Road, Leeds.
- Royal Dispensary, 21 West Richmond Street, Edinburgh.
- Edinburgh Central School of Pharmacy, 26 Clyde Street, Edinburgh.
- Glasgow School of Pharmacy, 180 West Regent Street, Glasgow.
- University of Manchester School of Pharmacy.
- University College, Edinburgh.
- University College, Bristol.
- University of Birmingham.
- University of Liverpool School of Pharmacy.
- University of Durham, Durham.
- City of London College, White Street and Rope-maker Street, Moorfields, E.C.
- Institute of Chemistry of Great Britain and Ireland, 30 Bloomsbury Square, W.C.
- Goldsmith's College, New Cross, S.E.
- South-Western Polytechnic, Manresa Road, Chelsea, S.W.
- Charing Cross Hospital Medical College, Charing Cross, W.C.
- National Dental Hospital and College, Gt. Portland Street, W.
- St. Thomas's Hospital (University of London), Albert Embankment, S.E.
- Royal Albert Memorial College, Exeter.
- City of Leeds Higher Educational Department, Education Offices, Leeds.
- Royal (Dick) Veterinary College, Edinburgh.
- Scottish Optical College, 157 St. Vincent Street, Glasgow.

## Bankruptcies and Failures.

**Re JOHN GEO. SAVAGE**, 123 Waterway Street, Nottingham, Drysalter and Spice-merchant.—The accounts in this failure show liabilities amounting to 466*l.* and assets valued at 30*l.* Debtor, who has been in business six years, attributes his failure to bad trade and an unfortunate partnership. Prior to coming to Nottingham he traded at Hathern and Aysworth Road, Ilkeston.

**Re RICHARD KNIGHT**, 70 Buckingham Gate, St. James's Park, London, S.W., Chemist and Druggist.—This case came before Mr. Registrar Linklater, on August 3, at the London Bankruptcy Court, for the debtor's public examination. The Official Receiver (Mr. W. G. Williams) reported that the receiving order was made on June 16, at the instance of a creditor for 87*l.* 14*s.* 6*d.*, and the debtor was adjudged bankrupt on June 25. He had not surrendered under the proceedings, and the Official Receiver had no information as to his present movements. His Honour ordered the examination to stand adjourned *sine die*.

**Re MARIO McNALLY & Co., LTD.**, Dublin, Chemists (in liquidation).—A circular dated July 26 has been issued to the creditors by Mr. Thomas C. Perrott, 12 Dawson Street, Dublin, solicitor for the company, stating that at the meeting of the creditors held on July 16 nothing definite was done, pending voluntary liquidation. At an extraordinary general meeting of the company held on July 26 a resolution was duly passed for the voluntary winding-up of the company, and Mr. J. W. Middleton, 12 Grafton Street, Dublin, was appointed liquidator for that purpose. Mr. Perrott adds that the liquidator is secretary to Messrs. Hayes Conyngham & Robinson, Ltd., chemists and druggists, and one of the largest creditors.



# Educational Information.

In this series of articles we deal with the legal requirements for registration under the Pharmacy, Medical, Dentists, and Veterinary Surgeons Acts, describing the Examinations and the Education necessary to pass them, while Scientific Education and Qualifications are also considered.

## Pharmacy.

THE practice of pharmacy and the sale of poisons are in all civilised countries more or less regulated by law, which usually requires that the persons engaging in such practice shall be properly qualified for the purpose by Education, Experience, and Examination. The three E's are universally necessary, but the manner of getting them differs in different countries. Thus in Austria, France, Germany, and most other Continental countries persons who wish to trade as pharmacists and use the title "apotheker" or "pharmacien," besides having a stipulated period of shop-experience, must put in two years or more at a university, studying certain subjects and passing certain examinations. A similar principle to this obtains in parts of the British Empire. Thus in Ireland attendance in certain subjects at specified schools is required; so also in Victoria and New South Wales; and in Canada a two years' course at a school of pharmacy is prescribed. There is thus a compulsory curriculum of study in these parts of the Empire which is not a binding condition in other parts. Although the qualifications of the Pharmaceutical Society of Great Britain are recognised to be as valuable as any qualification in pharmacy, the Society has not legal power to enforce a curriculum of study upon persons who wish to be examined for the title "chemist and druggist," and has not attempted to impose a compulsory curriculum upon those entering for the Major examination (title "pharmaceutical chemist"), although it appears to have such power under the Pharmacy Act, 1852. But what the Society has not the legal power to enforce it has in effect done through its examination-powers, so that candidates for the title "chemist and druggist" in Great Britain find the examination so searching that 99 per cent. of them do attend a college of pharmacy in order to be prepared for it. It may therefore be said that anyone who wishes to become a retail chemist in any part of the British Empire must have qualifications of three kinds—viz. :

**EDUCATION:** that is, a certain standard in ordinary school subjects, such as English, Latin, mathematics, and a modern language.

**EXPERIENCE:** that is, three years or more under a retail chemist learning the business, especially the compounding of medicines.

**EXAMINATION:** that is, in botany, chemistry and physics, practical dispensing, materia medica, pharmacy, and prescription-reading. These with or without collegiate study in some or all of the subjects.

It is a matter of regret that within the British Empire there is no generally recognised plan of reciprocity, whereby a man who qualifies in one part of it would be qualified in another. The man who qualifies in Great Britain is accepted in all other parts (without further examination) except Ireland or Canada; so also the man who qualifies in Ireland may practise everywhere in the Empire except Great Britain and Canada. Neither Great Britain nor Ireland has the power to accept pharmaceutical certificates from any other qualifying body whatsoever. Bills are now before Parliament which contain clauses that would give the Pharmaceutical Societies at home power to establish reciprocity of certificates with any other pharmacy-qualifying body in the Empire.

In what follows we give particulars of the requirements for qualification in Great Britain and Ireland.

### GREAT BRITAIN.

**THE QUALIFYING BODY:** Pharmaceutical Society of Great Britain, 17 Bloomsbury Square, London, W.C.; *Secretary and Registrar* (to whom all communications regarding the examinations must be addressed), Mr. Richard Bremridge.

**OFFICIAL PUBLICATION:** "Particulars of examinations," etc. (free from Mr. Bremridge).

**EXAMINERS FOR ENGLAND AND WALES:** Edward H. Farr, Horace Finemore, Frank Goldby, Walter F. Gulliver, Ernest S. Peck, Francis U. Stamp, Edmund White, and Robert Wright, pharmaceutical chemists; Professor R. J. Harvey Gibson, Herbert Jackson, Arthur G. Tansley and Professor W. Palmer Wynne, professorial examiners. Sir Thomas Stevenson, M.D., visitor on behalf of the Privy Council.

**EXAMINERS FOR SCOTLAND:** Peter Boa, George Coull, A. Davidson, D. B. Dott, J. I. Fraser, and G. F. Merson, pharmaceutical chemists; Professors John Gibson and James W. H. Traill, professorial examiners. Dr. Balfour Marshall, visitor on behalf of the Privy Council.

**EXAMINATIONS ARE HELD** at 17 Bloomsbury Square, London, W.C., and at 36 York Place, Edinburgh, in January, April, July, and October each year, beginning as soon as possible after the 15th day of each preceding month.

**EXAMINATIONS:** The "Minor" for the title "chemist and druggist," fee on first entering 10*l.* 10*s.*, each examination afterwards 3*l.* 3*s.* The "Major" for the title "pharmaceutical chemist," fee on first entering 3*l.* 3*s.*, for each examination afterwards 2*l.* 2*s.*

### THE TITLE "CHEMIST AND DRUGGIST"

is by the Pharmacy Act, 1868, conferred upon persons who are registered under the Act, and the persons registered are (1) those who were in business before the Act; and (2) those who pass or have passed the requisite examination—viz., the "Minor." The official notice in respect to this is as follows :

### REGISTRATION AS APPRENTICES OR STUDENTS.

No candidate will be admitted to the Minor examination who has not previously been registered as an "apprentice or student" (fee two guineas). The registration-fee of two guineas must in every case accompany the certificate submitted for acceptance. Persons desirous of obtaining registration as "apprentices or students," and of thus becoming eligible to enter for the Minor examination, must deliver to the Registrar, 17 Bloomsbury Square, London, W.C., on behalf of the Board of Examiners, certificates of having passed one of the examinations referred to below, if the following six subjects be included in the subjects for which such certificates have been granted :

**English, Latin, a modern foreign language, arithmetic, algebra and Euclid.**

These six subjects must have been passed at not more than two examinations of the same examining body, except in the case of certificates which are accepted by the Scotch Universities for registration as medical students.

The examination certificates referred to in this official notice are as follows :

**Aberdeen University.**—Junior or Senior Local examinations. Preliminary examination for Graduation in Medicine or Surgery. Preliminary examination for Graduation in Arts or Science.

**Cambridge University.**—Junior or Senior Local examinations. Higher Local examinations. Previous examination.

**Central Welsh Board.**—Honours, Senior and Junior certificates. **College of Preceptors.**—Examination for a First or Second Class certificate.

**Dublin University.**—Public Entrance examinations.

**Durham University.**—Junior or Senior Local examinations. Preliminary examination in Arts.

**Edinburgh University.**—Same as Aberdeen.

**Educational Institute of Scotland.**—Preliminary Medical examination.

**Glasgow University.**—Preliminary examination for Graduation in medicine or Surgery. Preliminary examination for Graduation in Arts or Science.

**Intermediate Education Board for Ireland.**—Senior, Middle, and Junior certificates.

**London University.**—Matriculation examination [containing Latin].

**Oxford University.**—Junior or Senior Local examinations. Responses.

**Oxford and Cambridge Schools Examination Board.**—Examination for Higher or Lower certificates.



*Royal University of Ireland.*—Matriculation examination. *Scotch Education Department.*—The Honours, and First Grade and Lower Grade Leaving certificates.

*St. Andrews University.*—Same as Glasgow.

*University of Wales.*—Matriculation examination.

*Victoria University.*—Entrance examination in Arts of the Faculty of Medicine. Preliminary examination.

Certificates of having passed an examination of a legally constituted examining body not specified in the above list may be submitted for the consideration of the Boards of Examiners and the approval of the Council, and each individual case will be considered on its merits.

*The Pharmaceutical Society no longer conducts a Preliminary examination.* Students are particularly requested to read the regulations carefully. Colonial and foreign students who have certificates from a university or State-recognised examining body covering the subjects printed in black type will have little or no difficulty in getting them accepted for registration. Persons who have matriculated at the Birmingham, Leeds, Liverpool, and Sheffield Universities by passing the Entrance or Matriculation examination of any of them, such examination including the above subjects, would no doubt be registered also.

#### SELECTION OF EXAMINATION.

One object of the Pharmaceutical Society in discontinuing the old Preliminary examination in Latin, English, and arithmetic, conducted by itself, was to encourage those entering the business to pass a recognised examination before being apprenticed. Most of those who have registered in the six years of the new regulation have done so, and although it is not compulsory it is advisable for many reasons to pass an approved examination before leaving school. Still, we are asked frequently for advice about the most suitable examinations to pass, and we give particulars below. The parents of boys and girls who mean to become retail chemists are advised to consult the schoolmasters regarding them, at least one or two years before leaving school, so that the time may be devoted to preparation for an appropriate examination in the approved list.

#### London Matriculation Examination.

This examination of the University of London is held in January, June, and September yearly, in London and many provincial centres. There are two kinds of examination—one without Latin, which is not accepted by the Pharmaceutical Society nor by the General Medical Council or the Institute of Chemistry. In the examination as accepted by the bodies named, six papers of three hours each are set in the following subjects:

1. *English.*—Composition, précis-writing, paraphrase, and analysis of sentences [English history and general geography essential].

2. *Elementary Mathematics.*—Arithmetic, algebra, and geometry (Euclid, Books I-IV).

3. *Latin.*—Translation into English from unprescribed Latin books, grammar and translation from English into Latin.

4. *French or German.*—Translation from and into French [or German], and grammar.

5. One of the following subjects: Greek, French, German, Arabic, Sanskrit, Spanish, Portuguese, Italian, Hebrew, Ancient History, Modern History, Physical and General Geography, History and Geography, Logic, Geometrical and Mechanical Drawing, Mathematics (more advanced), Elementary Mechanics, Elementary Chemistry, Elementary Physics—Heat, Light, and Sound; Elementary Physics—Electricity and Magnetism; Elementary Biology—Botany; Elementary Biology—Zoology.

Candidates must be sixteen years of age. The fee for the examination is 2*l.* We advise students to get a copy of the "Regulations for Matriculation," free on application to the Principal, University of London, South Kensington, London, S.W. This is the most valuable Preliminary examination in the world, since it opens the door to every qualification in pharmacy, medicine, and science except those granted by the Universities of Cambridge, Dublin, and Oxford.

#### College of Preceptors.

The second-class or junior certificate of this College is annually taken by an enormous number of school children of fourteen or thereabouts. It is accepted by the Pharmaceutical Society if it includes English language, arithmetic, algebra, geometry, Latin, and French or German. There is no limit to the number of times a candidate may enter for examination, and he may count towards registration the subjects passed at any two (not more) examinations. The examinations are held in London and the provinces at Midsummer and Christmas yearly, fee 1*3s.* to 2*5s.*, according to conditions. The details of the necessary subjects for 1907 are as follows:

*English.*—Spelling, short essay, paraphrase of poetry, general grammar and analysis of sentences.

*Arithmetic.*—Including simple questions on the metric system; but excluding cube root, problems on rate and time in interest, compound interest, and stocks.

*Algebra.*—Including simple equations, fractions, and easy quadratic equations of one unknown quantity. Alternative questions will be set on graphs.

*Geometry.*—One of three alternative papers may be taken—viz., (a) Euclid, Books I. and II., or the subjects treated therein, with riders; (b) Euclid, Books I. and III. 1-19, or the subjects treated therein, with riders; (c) a paper on theoretical and practical geometry, on the lines recommended by the Mathematical Association.

*French or German.*—Translation from and into the foreign language, and grammar.

*Latin.*—Either (1) a paper of "unseen" translation or a paper on one of the following books: (a) Caesar, "Gallic War," Book V.; (b) Caesar, "Gallic War," Book VII.; (c) Virgil, "Æneid," Book IX. 1-524. (2) Grammar and questions arising out of the books set for translation into English. (3) Simple English sentences for translation into Latin. In order to pass, candidates must satisfy the examiner in at least two of the three divisions.

Copies of the "Regulations" (1906 or 1907) can be obtained free on application to Mr. C. R. Hodgson, B.A., Secretary, College of Preceptors, Bloomsbury Square, London, W.C. The papers set at previous examinations may be had of Mr. F. Hodgson, 89 Farringdon Street, London, E.C., price per set 7*d.* post free.

#### Oxford Local Examinations.

These examinations, like the last-named, are a common means used by schools for testing the progress of their pupils. Entry-forms must be applied for not later than May 7, 1907, from the Local Secretary of the centre in which the candidate desires to be examined, and the fee (1*l.*) paid by May 10. The examination is held in July. A list of the centres and full particulars of the examination can be obtained on application to the Secretary, Local Examination Office, Merton College, Oxford. The following are details of the requisite pharmaceutical subjects in the Junior examination:

1. *English.*—(1) English composition; (2) grammar (parsing, analysis, paraphrase, and explanation); (3) Stevenson's "Treasure Island" or Shakespeare's "Twelfth Night," and other alternatives to (3), one of which and either (1) or (2) must be taken for a pass.

2. *Latin.*—Candidates must pass in two papers. These will include (a) translation into English of one or more unprepared passages, (b) translation of easy English sentences to illustrate common constructions, (c) grammatical questions, (d) translation of passages from set books with general questions thereon, (e) additional unprepared translation.

The set books for 1907 are Caesar, "De Bello Gallico," V., or Virgil, "Æneid," IX.

3. *French or German.*—Candidates must pass in two papers embodying requirements similar to the Latin paper.

4. *Arithmetic.*—Candidates will be expected to know the metre, the gram, and the litre (with their multiples and submultiples); the dollar, the franc, and the mark (with their submultiples); and the tables of avoirdupois, linear measure, square measure, and capacity. Questions may be set in which contracted methods of multiplication or division may be employed.

5. *Mathematics.*—(a) Algebra to easy quadratic equations; (b) Geometry, including the construction of the circumscribed, inscribed, and escribed circles of a triangle.

An examination in religious knowledge is set, and has to be passed, unless objection is taken to the subject.

#### Cambridge Local Examinations.

These are similar to Oxford, and full particulars, with a list of local centres, are given in the "Regulations," which may be obtained from Dr. Keynes, Syndicate Buildings, Cambridge. Examinations are held in July and December. Each candidate is required to pay a fee of 1*l.* to the University, and also a local fee. The paper in religious knowledge must be taken by all candidates, unless their parents or guardians object to their examination in that section. Every junior student is required to satisfy the examiners in writing from dictation.

#### Central Welsh Board Examinations.

The Junior examination of this Board in the subjects prescribed by the Pharmaceutical Society is one for which boys and girls in Welsh county schools should study and pass. The fee is 5*s.*, and the examination is held in July. Particulars may be obtained from the Clerk of the Central Welsh Board, Cardiff.

#### Educational Institute of Scotland.

A Preliminary examination is held in Edinburgh, Glasgow, London, Liverpool, and Dublin simultaneously in January, April, July, and September. Pharmaceutical candidates are allowed to take the six subjects in two sittings. Two papers are taken on each of the three days of the examination, and two hours are allowed for each subject. Excellence in one of the three mathematical subjects may help a candidate who is weak in another mathematical subject. The same in the language group. Defective spelling means failure. The following are the subjects of examination:

1. *English.* including dictation, composition, parsing, and derivation.

2. *Latin.* Grammar, translation into English from authors not prescribed, and prose composition.

3. *Mathematics.* including: (a) Arithmetic: The common rules and vulgar and decimal fractions. (b) Algebra: Up to and in-



cluding simple equations. (c) Geometry: Euclid, Books I.-III., with deductions.

4. French or German: Grammar and translations from English into the language chosen, and *vice versa*.

The fee for pharmaceutical candidates is 17s., payable at least five days before a first examination, and 10s. per examination subsequently. Forms of entry should be obtained from Mr. S. M. Murray, 40 Princes Street, Edinburgh, about a week before the end of the month preceding the examination.

For special information regarding these examinations, instructions as to preparation, and questions set in them, get a copy of the "Guide to Preliminary Examinations for Pharmacy, Medicine, Dentistry, Veterinary Surgery, and Science," published at the Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, London, E.C., 2s. 6d., by post 2s. 9d.

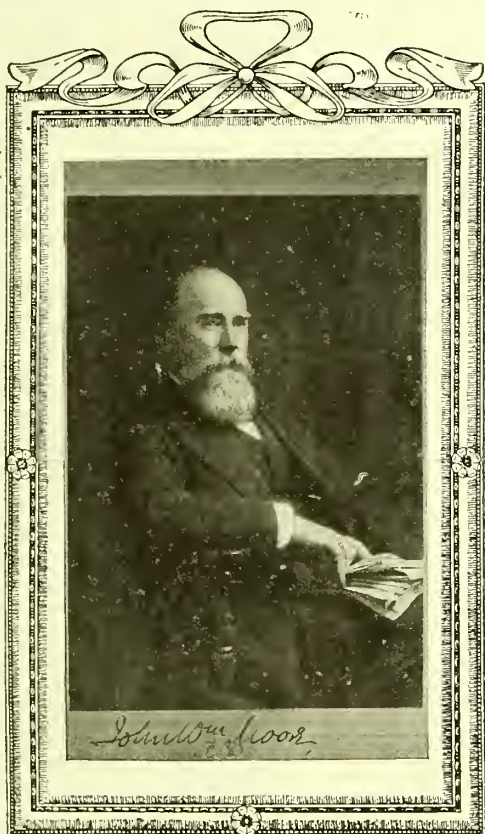
#### The Minor Examination.

Sometimes candidates for this examination who have passed a recognised Preliminary examination delay sending

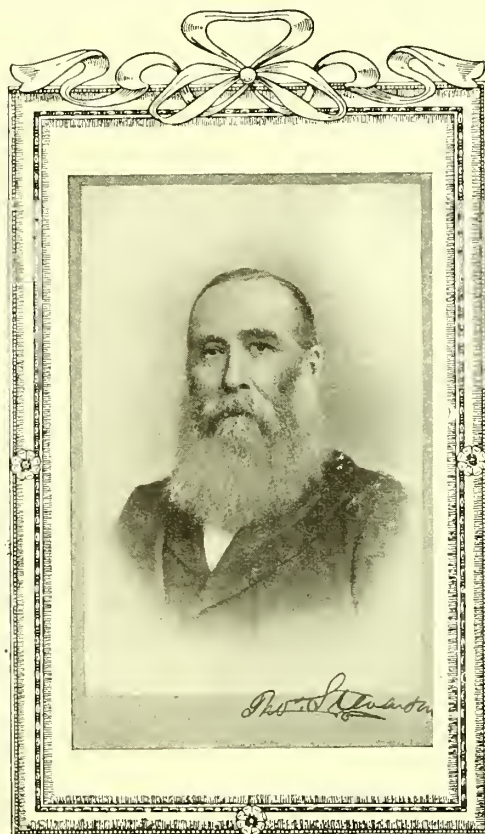
engaged in the translation and dispensing of prescriptions. The printed form on which this declaration is to be made can only be obtained from the Registrar. It may be signed by any chemist and druggist or registered medical practitioner, and the experience may be obtained anywhere at home or abroad. Each candidate must state, at the time of giving notice, whether he desires to be examined in London or in Edinburgh.

#### PREPARATION FOR THE EXAMINATION

begins on the day that a boy or girl enters a chemist's shop or dispensary, because all the pharmaceutical work done therein bears upon the examination. But the common experience is that this must be supplemented by home study, and ultimately a course of special instruction at a School or College of Pharmacy. It is not necessary to enlarge upon this in view of the fact that a series of articles for students of pharmacy entitled "A Scheme of Home Study," by an experienced teacher (Mr. David J. Williams, Ph.C., F.C.S.,



SIR JOHN W. MOORE, Dublin.



SIR THOMAS STEVENSON, London.

#### Privy Council Visitors at the Pharmaceutical Examinations.

in the certificate for the latter until they enter for the Minor. This is a mistake. The certificate of the Preliminary examination must be approved and the holder registered as a student *at least three months before applying for entry to the Minor examination*. The following paragraph embodies the official statements:

**Instructions to Candidates.**—Each candidate must give notice and pay the fee (10l. 10s. in the first instance) to the Registrar (Mr. Richard Bremridge, 17 Bloomsbury Square, London, W.C.) on or before the fifteenth day of March, June, September, or December, and he will receive due notice of the date on which he will be required to present himself for examination. When giving notice (for the first time), a candidate for the Minor examination must have attained the full age of twenty-one years, and must have been registered as an "Apprentice or Student." He will at the same time be required to produce a registrar's certificate of birth, and a certified declaration that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically

of the Metropolitan College of Pharmacy), is now appearing in the *C. & D.* The series commenced in the issue of July 7, and we quote from the first article a part which shows what the willing apprentice may do in the course of a three-years' pupillage:

It is possible, while not neglecting the business side and doing the daily duties of the shop, to improve in knowledge of the subjects of the qualifying examination. For that purpose a fair amount of time should be spent each day in attempting to master chemistry, pharmacy, botany, or materia medica. At the end of a year's careful work the student usually is ready for the South Kensington elementary stage in chemistry, and possibly botany. During the second year reading should be done in organic chemistry and materia medica especially, while physics also should receive some attention. Of course, inorganic chemistry and botany must still have a place in the week's work. During the third year special attention should be paid to pharmacy. All the reading that has been done should now be applied whenever possible to the study of the British Pharmacopoeia.



Assuming that the apprentice can put in an average of about two hours' study a day, excluding Saturday and Sunday, the ten hours per week might be divided as follows:

First Year.				
Inorganic chemistry	...	...	...	2½ hours
Practical analysis	...	...	...	3 hours
Botany	...	...	...	2½ hours
Latin, grammar, and physics	...	...	...	1 hour each alternate week
Materia medica	...	...	...	1 hour
Second Year.				
Organic chemistry	...	...	...	2 hours
Practical analysis	...	...	...	2 hours
Inorganic (theory)	...	...	...	2 hours
Materia medica and pharmacy	...	...	...	2 hours
Botany	...	...	...	1 hour
Latin and physics	...	...	...	1 hour each alternate week
Third Year.				
Chemistry (general) and B.P.	...	...	...	5 hours
Practical work	...	...	...	2 hours
Botany	...	...	...	1 hour
Revision	...	...	...	2 hours

This time-table is intended only to show what would be about the best relative arrangement of the work for a

beginner. It could, of course, be modified considerably to meet certain cases. Time for classes has not been included in the table, as it is believed that most students can arrange ten hours a week quite independently. It may also be pointed out that the task may be considerably lightened in the long run if the student will make every drug he handles during the day an object for thought or study. For instance, instead of handling a bottle containing oil of almonds carelessly, and being content with the appellation "Ol. amygd.," it is a distinct advantage to refer the thoughts always to its full Latin name, how it is obtained, its origin, etc. While cultivating careful handling, such a method does away with idle thoughts, and a mastery of the mind is secured.

Further, one soon finds that it is no longer necessary to spend hours in reading about things handled daily, and thus a well-earned rest is obtained. A word will not be out of place here concerning the time of the day most suitable for study. As a rule early morning should be selected, for then the mind, like the body, has had its rest and is ready to receive.

As a further guide to students it may be noted that the Council of the Pharmaceutical Society recommend that candidates for the examination should have the following course of instruction:

*Botany*: 45 lectures and demonstrations.

*Chemistry*: 60 lectures and 18 hours' practical work per week for six months.

*Materia Medica*: 25 lectures and demonstrations.

#### SUBJECTS OF THE EXAMINATION.

Students should get a copy of the official syllabus from the Registrar to guide them in their studies. It is not necessary to print it here in full. The following gives a general idea of the practical knowledge required of the candidate:

*Botany*.—Classification, including sub-classes and natural orders of angiosperms and recognition (fresh or dried) of forty-five specified medicinal plants. Morphology and anatomy of all parts of the plant, including recognition, by the microscope, of plant-structures. Elementary facts about the physiology of plants, including reproduction.

*Chemistry and Physics*.—An elementary knowledge of physical laws (e.g., conservation of energy, atmospheric pressure, and temperature); the characteristics of chemical action and the principles

of chemistry; non-metals and their compounds, with knowledge of the usual impurities in those included in the British Pharmacopœia; metals, their oxides and salts, including their preparation, properties, and adulterations; carbon compounds, especially those used in medicine, and how to prepare and test them. Problems relating to weight and volume under different conditions of temperature and pressure. The practical examination includes the application of physical laws, as by determining specific gravities, recognition of chemicals by tests, qualitative analysis (two metals and two acid radicals), identification of alkaloids, etc., volumetric analysis of the B.P., assaying galenical preparations containing alkaloids, and a practical acquaintance with the methods of preparing the more important B.P. inorganic substances and certain specified organic compounds (e.g., ether and chloroform).

*Materia Medica*.—Recognition of B.P. and other specified drugs, telling their principal commercial varieties, sources, natural orders, and modes of collection and preparation for the market, some knowledge of their morphology and active constituents, and how the latter may be determined.

*Pharmacy*.—The examination in this subject deals with all the operations involved in preparing drugs for administration—e.g., evaporation (extracts), distillation, sublimation, desiccation, distillation, and expression. He must also know the principles involved in the dispensing of medicines, particularly as to pill-masses and emulsions. The candidate is also required to show a general knowledge of the processes by which the official galenical preparations are made, and to have a knowledge of the proportion of

active ingredient or crude material in official preparations of aconite and other potent medicines. He must know what are the scheduled poisons in Part I. and Part II., and the legal conditions necessary to be observed in dispensing, retailing, exporting, and wholesaling them; also the special conditions imposed on the sale of arsenic by the Arsenic Act.

*Practical Pharmacy and Dispensing*.—The candidate is required to make certain B.P. preparations, and to do everything required in compounding and dispensing physicians' prescriptions.

*Prescriptions*.—The candidate is required to read and translate into English autograph prescriptions and know the grammatical construction of the Latin; to detect errors, discover unusual doses, and have a general knowledge of posology. Also to translate English prescriptions into Latin.

There is a Modified examination in the same subjects for persons who were assistants before 1869, and who registered as such before December 31,

1869. It is open to nobody else.

#### The Major Examination.

When the Pharmaceutical Society of Great Britain was founded in 1841 there was no law in the country regulating the practice of pharmacy except the Apothecaries Act, and at that time apothecaries had become medical men, although some retail chemists in a good way of business deemed it proper for their status to qualify as apothecaries. The Pharmaceutical Society's immediate purpose was to regulate the qualification of those engaged as dispensing chemists. Examinations were instituted—Preliminary, Minor (assistants), and Major, the last giving the title Pharmaceutical Chemist or Member of the Society. This provision was ratified by Charter (1843), and in 1852 a Pharmacy Act was passed making it illegal for any person but those who passed all the Society's examinations to use the title Pharmaceutical Chemist. It conferred no trading privilege otherwise. The Act of 1868 (really a Sale of Poisons Act) ratified the enactment, and, while restricting the sale and dispensing of poisons to qualified persons, followed the recommendation of a Select Committee in not adopting the highest qualification of the 1852 Act as the qualification for registration under the 1868 Act. The Committee were of opinion that this higher qualification was the thing for those engaged in dispensing physicians' prescriptions, yet the 1868 Act adopts

"The smart and by no means bad-looking group of gentlemen whose portraits we have collected, perform a very onerous and delicate duty for English pharmacy." So we read in "The Chemist and Druggist," May 15, 1876, when the set of portraits at the top of p. 255 was printed. In contrast with them we give portraits of pharmacist members of the Pharmaceutical Board of Examiners for England and Wales. We had thought of comparing their ages, but all we shall say is that in 1876 Mr. Michael Carteighe and Mr. Charles Umney were younger than are most of the members of the 1906 Board.

The surnames of the 1876 Examiners were:

First Row:—Allchin, Bengel, Linford, Martindale.

Second Row:—Barnes, Carteighe, Corder, Moss, Schweitzer, Southall (W.)

Third Row:—Gale, Haselden, Taylor, Umney.

On p. 258 we place a reproduction of a page of portraits of the Pharmaceutical Board of Examiners for Scotland which appeared in "The Chemist and Druggist," June 15, 1876. Two of them survive—viz., Mr. James Buchanan and Mr. James Robertson Young. This group was a companion to the group of English examiners on p. 255.

Surnames—

First Row:—Ainslie, Borland, Buchanan.

Second Row:—Gilmour, Kemp, Kinninmont.

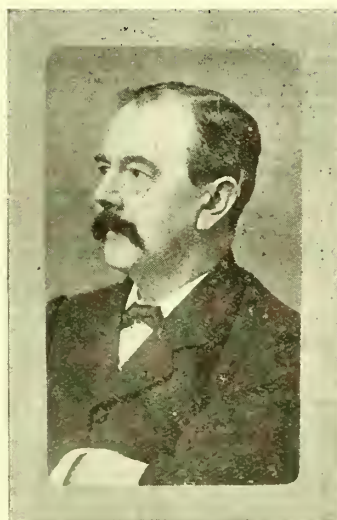
Third Row:—Mackay (Secretary), Tait, Young.



Pharmacists on English Boards, 1876-1906.



EDWARD H. FARR



ROBERT WRIGHT



ERNEST S. PECK, M.A.



WALTER F. GULLIVER



FRANK GOLBEY



FRANCIS U. STAMP



HORACE FINEMORE



the Minor or assistants' examination for registration as "chemist and druggist," and permits those who are in business as such to call themselves "dispensing chemist." In practice it has followed that persons who pass the Major examination have no trading privilege more than chemists and druggists, and through the effluxion of time the Minor examination has become far more comprehensive and difficult to pass than was the Major examination in 1868. The latter examination is still continued, but it is a purely scientific test, and is chiefly of value in giving higher rank within the trade and certain privileges within the Pharmaceutical Society; but those residing in England and Wales and in actual practice as pharmaceutical chemists (*i.e.*, keeping open shop) are exempt from jury-service. The examination is purely optional, and the names of those who pass it remain on the register of chemists and druggists; but if a pharmaceutical chemist becomes a registered medical practitioner, his name is removed from the register of pharmaceutical chemists. Any person who has passed the Minor examination may enter for the Major, the fee for which is 3*l.* 3*s.* The examination is in writing, and practical work in all the subjects, while these may be followed by an oral examination. The subjects are, briefly, as follows:

**Botany.**—Candidates should have, in addition to what is required in the Minor examination, a thorough knowledge of classification, morphology, and physiology. They are required to make and mount microscopic preparations illustrating vegetable structure, and to apply micro-chemical tests for cells and their products.

**Chemistry and Physics.**—Candidates may be taken more fully in the Minor subjects, and are expected to have a good knowledge of the constitution of matter, heat, light, magnetism, electricity, chemical theory, and the classification, characteristics, and constitution of the carbon compounds, particularly cyanogen derivatives, hydrocarbons, and paraffin and benzene derivatives. Special attention is paid to B.P. standardising processes. Practical work comprises the analysis of mixtures of three metalloids; estimation of nitrogen in organic compounds; determination of melting and boiling points; gas-analysis by nitrometer; preparation of specified organic substances; recognition by chemical reactions and determination of the strength and purity of inorganic and organic compounds (including drugs and galenicals) by B.P. tests and assay-processes, the separation of alkaloids and glucosides, and detection of methyl alcohol in galenical preparations.

**Materia Medica.**—Candidates must know how to estimate the value of important drugs, and to distinguish commercial varieties and separate official active principles. Also to have a general acquaintance with the actual constituents of all important drugs, discover adulterations, examine drugs microscopically, and to discover adulteration in powdered drugs by comparison with authentic material.

EXAMINATION EXPERIENCES have during this year appeared in the following issues of the *C. & D.*: *Minor*: March 31, April 21, June 23, and (dispensing) July 21. *Major questions*: April 7. See also this issue, p. 263.

### IRELAND.

**EXAMINATION AUTHORITY.**—The Pharmaceutical Society of Ireland, 67 Lower Mount Street, Dublin. *Secretary and Registrar*, Mr. Arthur T. Ferrall.

**EXAMINATIONS.**—*Preliminary*, held in January, April, July, and October yearly, fee 2*l.* 2*s.*; *Assistants to Pharmaceutical Chemists*, same months, fee 2*s.* 2*d.* *Pharmaceutical Licence*, same months, fee 5*l.* 5*s.* The foregoing are held in Dublin only. *Registered Druggists* held in Dublin same month or in Belfast if twelve candidates enter, fee 4*l.* 4*s.*

**EXAMINERS.**—*Preliminary*, Arthur J. Barnes and L. J. Woodroffe. *Assistants*, Henry O'Connor. *Licence*, D. S. Jardin (chemistry), W. N. Allen, George Brown (pharmacy), and E. W. Allsom (botany and materia medica). *Druggists*, James Guiler. Privy Council Visitor, Sir John W. Moore, M.D.

**OFFICIAL PUBLICATION RELATING TO EXAMINATIONS.**—"Regulations," to be obtained from the Registrar free, and copies of papers set at the examinations, post free 6*d.* per set.

The conditions in Ireland differ essentially from those in Great Britain. In Ireland there are two grades of traders. The first, created by the Pharmacy Act, 1875, comprises pharmaceutical chemists, who may keep open shop for retailing, dispensing, and compounding poisons and medical prescriptions; and the second, created by the 1890 Act, comprises chemists and druggists (in business before the Act) and registered druggists, who may keep open shop for retailing and mixing poisons, but may not compound or dispense medical prescriptions. Apothecaries have the same privileges as pharmaceutical chemists, and may, indeed, on certain conditions be registered as such. We deal first with those who wish to obtain the title

### Pharmaceutical Chemist.

For this there are two examinations, (1) the Preliminary and (2) Pharmaceutical Licence. Both examinations are conducted by the Society's examiners. By a new regulation which comes into force after December 31, 1906, the Preliminary examination must be passed prior to the four-years' experience with a pharmaceutical chemist, which is one of the conditions for entering the Licence examination. Briefly, therefore, the conditions for obtaining registration as a pharmaceutical chemist in Ireland are as follows:

1. Pass the Preliminary examination.
2. Be engaged four years as apprentice with a pharmaceutical chemist (or other approved person).
3. After attaining twenty-one years of age pass the Licence examination.

The Assistants' examination is an intermediate one, but does not count for the Licence. The following are the official particulars:

#### PRELIMINARY EXAMINATION.

**Entrance.**—At least fourteen days before the first Thursday of January, April, July, or October, candidates, having paid the fee of 2*l.* 2*s.* to the account of the Pharmaceutical Society into the Bank of Ireland and obtained a receipt, send the latter, with a certificate of birth and a letter, as follows, in their own handwriting, to Mr. Ferrall at the above address:

I ..... desire to be admitted for the Preliminary examination of the Pharmaceutical Society, including ..... as an optional subject, and herewith enclose certificate of birth.

This must be in Mr. Ferrall's hands at least fourteen days before the Thursday mentioned. On that day, at 11 A.M., the examination is held in Dublin, and it extends to the following day. It is solely in writing, and candidates have to pass in the first six subjects mentioned below, and one of the subjects, 7, 8, or 9.

1. *Latin.*—To translate into English and parse sentences from Caesar's "Commentaries" (*De Bello Gallico*), First Book, or Virgil's "Æneid," First Book. To translate an easy English sentence into Latin.
2. *English.*—Grammar, including orthography and parsing. To write on a subject selected by the examiner; and to write from dictation.
3. *Arithmetic.*—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures and the metric system.
4. *Algebra.*—As far as simple equations, inclusive.
5. *Geometry.*—Including the first book of Euclid.
6. *Elementary Theoretical Chemistry.*—*Chemical Action.*—Illustrations and examples. Simple and compound substances. Atoms and molecules. Chemical symbols and nomenclature; formulae and equations. General nature of acids, bases, and salts. *Combustion.*—Structure and properties of flame. *Water.*—Proofs of composition. Methods of purification. *The Air.*—Its constitution. Reasons for considering it a mixture and not a compound.—The chief physical and chemical characters, with methods of preparation of the following elements and compounds: Hydrogen, oxygen (and ozone), nitrogen, carbon, chlorine, sulphur, nitrous oxide, nitric oxide, nitric acid, ammonia, carbon dioxide, carbon monoxide, marsh gas, olefiant gas, hydrochloric acid, sulphur dioxide, sulphurous acid, sulphuric acid, sulphuretted hydrogen.
7. *Elementary Physics and Mechanics.*—Sound, light, and heat, as given in Ganot's "Elementary Course of Natural Philosophy"; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.
8. *The Rudiments of Botany.*—"Lessons in Elementary Botany," Edmond's first fourteen chapters.
9. *French, German, or any modern language.*

One hour is allowed for answering the questions given in each subject. In the event of a candidate failing he is readmitted after six months on payment of a fee of 10*s.* 6*d.*

**OTHER EXAMINATIONS ACCEPTED.**—The Preliminary or Matriculation examination of the Royal College of Surgeons, or such other examination as is accepted by the General Medical Council as equivalent to it, and the Preliminary examination of the Pharmaceutical Society of Great Britain, are accepted instead of the above. Fee for registration 2*l.* 2*s.*

#### PHARMACEUTICAL LICENCE EXAMINATION.

**THE CONDITIONS** are (1) candidates must be twenty-one years of age; (2) they must have passed the Preliminary examination at least one year previously (after December 31, 1906, four years); (3) they must have been engaged four years as an apprentice or assistant with a pharmaceutical chemist, chemist and druggist of Great Britain, or apothecary keeping open shop (provision being made for shorter periods with two or more individuals) [in the case of persons who have served a four-years' apprenticeship to a chemist and druggist or registered druggist an additional two years with a pharmaceutical chemist, etc. (as condition 3), suffices, and the Preliminary examination must be passed before those two years]; (4) candidates must also attend a course of practical chemistry of not less than three months, and actual work at the bench of 100 hours, at one of the following institutions, and at a course of



botany and of materia medica at one of those marked with an asterisk or otherwise indicated:

\*School of Pharmaceutical Society of Ireland.  
 \*School of Pharmaceutical Society of Great Britain.  
 Cecilia Street School of Medicine, Dublin.  
 City of Dublin Technical Schools.  
 Government School of Science, South Kensington.  
 \*Queen's Colleges, Belfast, Cork, and Galway.  
 Royal College of Science for Ireland, Dublin.  
 Royal College of Surgeons in Ireland, Dublin.  
 Trinity College, Dublin.  
 School of Physic, Trinity College, Dublin (botany and materia medica only).  
 Anderson's College Medical School, Glasgow.  
 \*Royal Academical Institution, Belfast.  
 \*Municipal Technical Institute, Belfast.  
 Crawford Municipal Technical Institute, Cork (botany and chemistry only).

**ENTRANCE.**—The examination is held at the Society's house, Dublin, on the second Wednesday of January, April, July, and October, at 11 A.M. Candidates must give notice to the Council, fourteen clear days before these, of their desire to be examined, and also lodge with the Registrar a receipt of having paid the fee of 5*l.* 5*s.* into the Bank of Ireland, to the credit of the Society. They should also forward the Preliminary certificate, the statutory declarations of having been engaged in compounding and dispensing for four years, the certificates for practical chemistry, botany, and materia medica, and satisfactory proof of having attained the age of twenty-one years. The form of notice is as follows:

*I ..... desire to be examined for the licence to act as a pharmaceutical chemist.*

**SUBJECTS OF THE EXAMINATION.**—The examination occupies at least three days; the first day being devoted to a written examination in all subjects, the second to practical pharmacy and chemistry, and the third day to oral examination in all subjects, viz.:

**Botany.**—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

**Materia Medica.**—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

**General and Pharmaceutical Chemistry.**—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in these subjects. (The Council recommends Corbyn and Stewart's "Physics and Chemistry.")

**Practical Pharmacy.**—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly. To explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 33 & 34 Vict. chap. 26, 1870.

In the event of failure candidates may be re-examined after six months on payment of a fee of 2*l.* 2*s.*

#### REGISTERED DRUGGISTS.

The examination prescribed by Section 8 of the Pharmacy Act, 1890, for those who desire to trade as registered druggists is held in Dublin on the second Tuesday of January, April, June, and October, also in Belfast if twelve candidates wish to be examined there at a time. The fee, 4*l.* 4*s.*, has to be paid to the credit of the Society into the Bank of Ireland, and the receipt, with the necessary certificates, forwarded to the Registrar fourteen days at least before the date of the examination. Any person who has served four years as an apprentice or assistant to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary may be registered as a druggist under the Act on passing the examination in the following subjects as prescribed therein:

English orthography and composition.

Arithmetic and the weights and measures of the British Pharmacopœia.

The appearance and properties of the various drugs and chemicals in general use.

The Sale of Poisons (Ireland) Act.

In the event of a candidate failing, he is readmitted in six months on payment of the examiners' fees.

#### ASSISTANTS TO PHARMACEUTICAL CHEMISTS.

Candidates must have passed the Preliminary examination, and have been engaged at practical pharmacy for at least four years, and must, when giving notice for examination, produce declarations similar to those required for the Licence examination. The examination is held on the Monday following the Licence examination in January, April, July, and October, at 11 A.M.

Candidates must give notice to the Registrar at least fourteen clear days before of their desire to be examined, according to the following formula, with a receipt of having lodged the

fee of 1*l.* 1*s.* in the Bank of Ireland to the credit of the Society:

*I ..... desire to be examined for the qualification of Assistant to Pharmaceutical Chemist.*

Candidates rejected at the Licence examination immediately preceding, and who have served four years at practical pharmacy, may present themselves at the Pharmaceutical Assistant examination on the following Monday, on giving notice to the Registrar, and paying the fee of 1*l.* 1*s.*

The subjects of examination are:

**Prescriptions.**—Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

**Practical Dispensing.**—To weigh, measure, and compound medicines, write the directions in suitable language, finish, and properly direct each package.

**Materia Medica and Quality of Specimens.**—To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins, and gums in ordinary use; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

**Pharmacy.**—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures, and powders, and give the proportions of the more active ingredients. The candidates will also be examined in the Sale of Poisons (Ireland) Act.

In the event of failure candidates may present themselves again after six months for a fee of 10*s.* 6*d.* The candidates successful at this examination are legally "competent to transact the business of a licentiate of the Pharmaceutical Society in his temporary absence, but shall not be entitled to conduct or manage a business or to keep open shop on their own account."

#### Other Qualifications in Pharmacy.

The earliest Act still in force for regulating the practice of pharmacy is one passed by the Irish Parliament, 1791, establishing an Apothecaries' Hall in Dublin, and, *inter alia*, providing for the examination of apprentices, foremen or shopmen to apothecaries in Ireland. Section 18 of the Act declares that there had been taken as apprentices "boys or persons disqualified by the want of proper education to prepare or vend medicine, not being capable of learning their nature, difference, effects, and qualities," and provides that no such person shall be taken, nor any foreman or journeyman, into the employment of an apothecary in Ireland until he has been examined by the Governor or Deputy-Governor of the Apothecaries' Hall in Dublin. Certificates are provided for (1) an apprentice to learn and (2) a journeyman to transact the business of an apothecary. This is the law for Ireland since June 24, 1791. It is further provided by Section 22 that no person shall open shop or act as an apothecary until he has been examined, passed, and taken the oath. At the present day the Apothecaries' Hall grants under the Medical Acts a certificate of qualification for registration as a general medical practitioner, and a certificate to act as an

#### ASSISTANT TO AN APOTHECARY.

The latter is apparently a term borrowed from a corresponding Act passed in 1815, which deals with the qualifications of apothecaries practising in England and Wales, and requires every person acting as an assistant to such apothecaries in compounding and dispensing medicines to be examined and certified as competent by the Society of Apothecaries of London. These certificates are, in a sense, qualifications in pharmacy so far as they go, but the Pharmacy Acts (Ireland, 1875, Great Britain, 1868) do not extend their legality to service with pharmaceutical chemists and chemists and druggists (G.B.). They are requisite for service with an apothecary in preparing and vending medicines of any kind, and confer no title upon the holders of the certificates.

For the Irish certificate an examination is held at the Hall, 40 Mary Street, Dublin, on the first Friday of each month except August. Candidates for the examination must be sixteen years of age, and must prove that they have spent two years at practical pharmacy under a duly registered apothecary or pharmaceutical chemist, and show that they are of good moral conduct. The subjects of the examination are:

**Pharmacy, Practical and Theoretical**, including the correct translation of medical prescriptions.

**Materia Medica**, including the doses of the Pharmacopœia, and the recognition of the drugs.

**Antidotes** used in cases of poisoning.

**Pharmaceutical Chemistry**, including the fundamental laws and



recognition of poisonous chemicals. Knowledge of the British Pharmacopœia is requisite.  
*Metrie System of Weights and Measures.*

Fee, 2l. 2s., to be paid to the Secretary at the above address, with notice of intention to appear, at least seven days before the examination is held.

The examinations of the Society of Apothecaries, Blackfriars, London, E.C., are held at that address on the fourth Wednesday and following days of January, April, July, and October. The examination consists of two parts—practical and oral. The former comprises

(1) *Compounding and Dispensing of Medicines.*

The oral part consists of

(2) *Chemistry.*—General principles; preparation and properties of the elements; hydrochloric, nitric, and sulphuric acids, and their action upon the common metals, metallic oxides and carbonates; chemical composition of water and air; preparation, properties, and tests of salts of ammonium, sodium, potassium, calcium, magnesium, alum, zinc, iron, lead, silver, copper, bismuth, antimony, and mercury, as well as such things as chloroform, glycerin, quinine, and hydrocyanic, acetic, tartaric, and citric acids and their common salts.

(3) *Materia Medica and Pharmacy.*—Candidates are required to show a knowledge of the chemical and physical characters, the composition, and doses of the articles and preparations included in the British Pharmacopœia, 1898, and to recognise many of them. The examination includes the translation of prescriptions.

The conditions of entry are as follows: The candidate should obtain from Mr. F. Haydon, L.R.C.P., Secretary, at the above address, a form of entry, which he should fill up and return, with 5l. 5s., fourteen days at least before the examination is held. A certificate of age and one (signed by a registered medical practitioner or an assistant of the Society holding a public appointment, or a legally qualified chemist) of having had instruction in practical pharmacy for six months have to be sent with the application. The candidate is credited with any subject in which he may satisfy the examiners, and the fee for re-examination is 2l. 2s. A candidate must be eighteen years old before the certificate is granted: this does not prevent anyone going in earlier.

### Degrees in Pharmacy.

The Manchester University grants the degree of B.Sc. (Pharm.) to registered chemists and druggists who conform with the University's provisions for a degree in science (see p. 273), pharmaceuticals being taken as one of the professing subjects. The Glasgow University is establishing a similar provision, but it will not come into force for a year. In both these cases it is necessary that the candidates should pass the University's examination in arts required for all students of science, and matriculate at the University before the three years' curriculum is commenced. The possession of degrees by pharmacists is held to be one of the principal ways of "elevating the status" of pharmacy. Whether this will be accomplished on a large scale or not, it is certain that the training obtained in reading for a degree is valuable to those who intend cultivating the professional side of the drug business.

## Facilities for Education in Pharmacy.

There are ample facilities for instruction in the subjects of the Pharmacy Acts examinations. The Pharmaceutical Society of Great Britain established a school of pharmacy in 1842, where the system of education has always been such as to fit the student for the work of his life. Since 1868 many proprietary schools have been opened in London and elsewhere, where the teachers keep the examinations directly in view. Latterly technical colleges have begun to cater for students of pharmacy. The Pharmaceutical Society of Ireland has its own school, and recognises several others in Ireland for the courses which are compulsory for the Pharmaceutical Licence examination. We give brief particulars respecting all these.

### THE SCHOOL OF PHARMACY,

17 Bloomsbury Square, London, W.C.

Staff: BOTANY—Professor J. Reynolds Green, Sc.D., F.R.S.; Demonstrator: T. G. Hill, A.R.C.S., F.L.S. CHEMISTRY AND PHYSICS—Professor A. W. Crossley, D.Sc., Ph.D. (Dean); Demonstrators: C. H. Warner and J. W. A. Wright. PHARMACEUTICS—Professor Henry G. Greenish, F.I.C., F.L.S.; Demonstrator: H. W. Harvey.

The session commences on October 2, 1906. Two courses of study are given—elementary and advanced. The elementary course includes subjects required for the Minor, and extends to the end of June 1907. The advanced course extends from October to the end of March. Students may, however, enter the school at any time and for any subject or part of the course. The fee for the elementary course is 32l. 11s., or 30l. to student-associates of the Society, and for the advanced course 18l. 18s. or 18l. to student-associates or members of the Society. Summer term for students who have completed the advanced course, 4l. 4s. Winter term for those who have completed the elementary course, 6l. 6s. For full particulars and prospectus address the Dean.

MUTER'S (SOUTH LONDON) SCHOOL OF PHARMACY,  
325 Kennington Road,  
London, S.E.

Founder: Dr. J. Muter.

Principals: Messrs. A. H. M. Muter, F.I.C., F.C.S., and Charles A. Hackman, F.I.C. Staff: Mr. Frank Armstrong; Mr. John Thomas, B.Sc.; and Mr. W. A. Whatmough, Ph.C., Pereira Medallist. *Secretary*, Miss G. Duckworth, L.L.A.

The session at this school lasts from September until the middle of July. Fresh courses of lectures for the Minor and Major begin on September 18, January 1, 1907, and April 2. The fees for the Minor or Major are 8l. 8s. a term (except September to January, 9l. 9s.). A tutorial class begins on August 22 for the October examination (fee 4l. 4s.). The winter term begins on September 18 (fee 9l. 9s.) or October 2 (fee 8l. 8s.) for the January Minor, and at later periods for the April and July examinations. Evening classes are held (fees 1l. 5s. to 3l.). For further particulars apply to the Secretary, Miss G. Duckworth, at the above address.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY,  
Trinity Square, Borough, London, S.E.

Principal: Mr. G. S. V. Wills, Ph.C., F.L.S. Staff: Mr. W. A. Knight, Ph.C. (Pereira Medallist); Mr. E. G. Price, Ph.C.; Mr. H. S. Wills. *Secretary*, Mr. J. E. Walden.





Four courses of lectures are given, beginning in August, October, January, and April. The next session begins on August 22. Minor fees, 8*l.* 8*s.* for one course; two, 12*l.* 12*s.*; until qualified, 15*l.* 15*s.* Major, 6*l.* 6*s.*, or 10*l.* 10*s.* until qualified. Apothecaries' Hall, one session, 5*l.* 5*s.*; two sessions, 8*l.* 8*s.* Evening classes, 1*l.* 1*s.* for thirteen nights. Postal systems are arranged for all examinations. A special set of text-books has been published by the principal, these embracing chemistry, botany, materia medica, pharmacy, vegetable histology, and prescription-reading.

**METROPOLITAN COLLEGE OF PHARMACY,**

160 and 162 Kennington Park Road, London, S.E.

Founder: W. Watson-Will, F.L.S., F.C.S. Principal: C. Edward Sage, Ph.C., F.C.S. Demonstrators: David

**LONDON COLLEGE OF CHEMISTRY, PHARMACY, AND BOTANY,**  
323 Clapham Road, London, S.W.

Principal: Mr. Henry Wootton, B.Sc. Demonstrators: Mr. A. Kirkland, Ph.C., Mr. G. G. Watt, Ph.C., and Mr. J. Wilson, M.A.

The terms commence on October 2 and at the beginning of January and April. The fees for the Minor course per term are 9*l.* 19*s.* 6*d.* (two terms, 17*l.* 17*s.*); Major, 7*l.* 7*s.* (two terms, 12*l.* 12*s.*). A special revision course for advanced students begins on August 15; fee till the October examination, 5*l.* 5*s.* Evening classes are held, beginning on September 5, the fees for which vary from 1*l.* 1*s.* to 2*l.* 7*s.* 6*d.*, according to the number of classes attended each week. Special classes are held daily, commencing September 25, in preparation for the



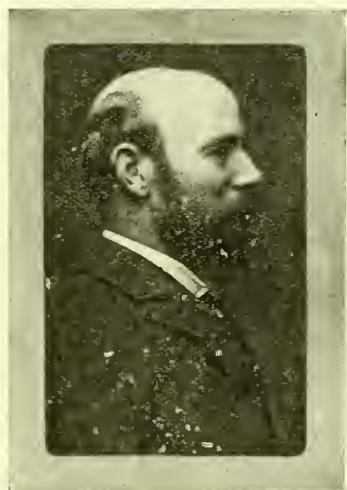
GEORGE F. MERSON  
(Major 1892)



DAVID B. DOTT  
(Major 1883)



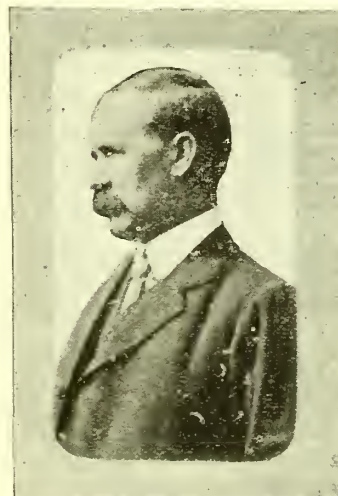
GEORGE COULL, D.Sc.  
(Major 1836)



PETER BOA  
(Major 1890)



ALEX. DAVIDSON  
(Major 1876)



J. INNES FRASER.  
(Major 1879)

**Pharmacists on Scotch Board, 1906.**

J. Williams, F.C.S., Ph.C.; C. Breuninger, Ph.C.; Samson Feldbaum and H. J. Wheeler, F.R.H.S. Secretary, Mr. W. S. Carver.

The Central School of Pharmacy, established by Dr. Ellwood and Mr. Sage, is now incorporated with this College. A special revision course for the October examination commences on August 14. There are three full courses for the Minor and Major, the first beginning on September 3, and others on January 1, 1907, and April 1, 1907. The fees are: Major course 8*l.* 8*s.*, and Minor course, 10*l.* 10*s.* Evening classes are held on Monday, Wednesday, Thursday, and Friday for Minor and Major students. Practical chemistry, vegetable histology, and botany are taught for the examinations in medicine and science of the London University and the Institute of Chemistry.

examinations of the College of Preceptors; fee, 4*l.* 4*s.* for three months.

**Brixton School of Chemistry and Pharmacy,**  
78 Stockwell Park Road, London, S.W.

Principal: Dr. A. B. Griffiths, F.R.S.E. Classes are held for the Minor, Major, and Apothecaries' Hall examinations. For particulars as to fees apply to the Principal.

**SOUTH OF ENGLAND COLLEGE OF PHARMACY,**  
186 Clapham Road, London, S.W.

Principal: Mr. H. Lucas, Ph.C., F.C.S. This college is to be opened on September 3. Fees for the Christmas Minor examination, 9*l.* 19*s.* 6*d.*; other terms (beginning January and April), 9*l.* 9*s.*



## IMPERIAL COLLEGE OF CHEMISTRY,

49 and 51 Imperial Buildings, Ludgate Circus, London, E.C.

Principal: Mr. F. Davis. Courses for the Minor examination begin in January, April, July, and October. Fee, 10*l.* 10*s.* per course; Major, 8*l.* 8*s.*

## APOTHECARIES' COLLEGE FOR LADIES.

112 St. George's Road, Southwark, S.E.

Principal: Mr. G. S. V. Wills, Ph.C., F.L.S. Visiting Examiner: Dr. A. Matcham. Fees, 5*l.* 5*s.* for three months; 8*l.* 8*s.* six months. Secretary, Mr. J. E. Walden.

## PROVINCIAL.

## BARROW-IN-FURNESS.

At the *Technical School and Higher Grade School* the evening classes in theoretical and practical chemistry and botany are suited for Minor students. For particulars apply to Mr. W. Hutchinson, Secretary of the Education Committee, the Town Hall.

## BIRMINGHAM.

*Birmingham and Midland College of Pharmacy, Chemistry, and Botany*, 45 Newhall Street.—Principal, Mr. W. J. Moylan-Jones. A special course for the Christmas Minor begins on August 15; fee, 12*l.* 12*s.* Other terms begin in October and January (fee 8*l.* 8*s.*), and in April (fee 7*l.* 10*s.*). Evening classes are held; fee, 1*l.* 1*s.* per quarter.

*Central School of Pharmacy*, 90 New Street.—Mr. Stokes Dewson has day and evening classes for all examinations in pharmacy.

Mr. F. H. Alcock, F.I.C., Temple Chambers, Broad Street Corner, gives tuition in all pharmaceutical subjects. Fees, 8*l.* 8*s.* per quarter, or per subject by arrangement.

*Municipal Technical School*, Suffolk Street.—Courses in chemistry (lectures and laboratory) for the Minor begin in September, and are held on Wednesdays from 2.30 to 5.50 p.m. Lecturers: Messrs. D. F. Twiss and A. W. T. Hyde. Fee for the first year's course, 5*s.* (lectures and laboratory); second year's course, 6*s.* There are also botany classes (fees 6*s.*, and practical 7*s.*).

## BRADFORD.

*Technical College*.—Head of Department, Professor W. M. Gardner, M.Sc. Lecturers in Chemistry, Mr. B. North, A.R.C.Sc., and Mr. S. F. Stell. Lecturer in Botany, Materia Medica, and Pharmacy, Mr. W. West, F.L.S. The general pharmaceutical course includes chemistry and physics, botany, materia medica and pharmacy, and dispensing, and extends over two years, and is so arranged that apprentices can prepare for the Minor and Major examinations without giving up shop-duties. The classes are held in the afternoons and evenings.

## BRIGHTON.

*Technical College*.—A pharmaceutical course for Minor students can be obtained at this college, Richmond Terrace. The classes meet in the daytime, also in the evening. Fee for a complete course, 5*l.* 5*s.* For full particulars apply to the Principal, Dr. C. H. Draper, B.A.

## BRISTOL.

*The University College*.—A course of pharmaceuticals by Mr. Oliver C. M. Davis, B.Sc., Ph.C., covers the Minor; and botany and chemistry lectures and practical work are also serviceable. For full particulars apply to the Secretary.

## DERBY.

*Derby Technical College*.—Principal, Mr. F. W. Shurlock, B.A., B.Sc. Classes in pharmacy and materia medica are taken by Mr. S. Taylor, Ph.C., on Wednesdays; fee, 1*l.* 1*s.* Botany and chemistry classes suitable for students of pharmacy are also held. Apply at the College.

## EXETER.

*Royal Albert Memorial College School of Pharmacy*.—Principal, Mr. W. S. Charlton, B.Sc. There is a complete course of instruction for the Minor in day and evening classes. Fee for ten months' course, 10*l.* 10*s.* Shorter courses and single subjects may be taken if desired. Mr. H. Wippell Gadd, F.C.S., is the lecturer in pharmaceuticals. For particulars apply to Mr. A. Woodbridge, Registrar.

## LANCASTER.

*Technical School, Storey Institute*.—Principal, Mr. William French, M.A., F.I.C. The classes in botany, chemistry, and physics are suitable for Minor students.

## LEEDS.

*College of Pharmacy*, Clarendon Road.—Principal, Mr. F. Pilkington Sargeant, Ph.C., F.C.S. Full and part time classes are held. A special course commences on August 20 for the October or January examination, also for the latter on October 16. The part-time classes resume work on August 20. Fee (three months' full time), Minor or Major, 8*l.* 8*s.*; evening and weekly, 4*l.* 4*s.* (six months). Special classes are held for ladies.

*Technical School*.—(Institute of Science, Art, and Literature.) Evening courses in chemistry, pharmaceuticals, and botany begins on September 17 for pharmaceutical students. Prospectus from the Secretary, Mr. Arthur Tait, Leeds Institute, Cookridge Street.

At the University there are courses in chemistry, physics, and botany suitable for pharmacy students. Mr. J. H. Gough, Ph.C., F.C.S., is demonstrator in practical pharmacy.

## LIVERPOOL.

*School of Pharmacy*, 6 Sandon Terrace, Upper Duke Street.—Principal, Mr. R. C. Cowley, Ph.C. The full-time course of study for the Minor begins on September 10 and continues till Christmas, the fee being 10*l.* 10*s.* The January and April courses continue till the April and July examinations, fee 9*l.* 9*s.* Major full-time classes are held daily, fee 9*l.* 9*s.*; part-time classes are held on Wednesdays from 3 to 10 p.m., beginning September 12; fee, 7*l.* 10*s.* A tutorial class for advanced students is held on Tuesdays, commencing on September 11.

The University has a School of Pharmacy, with the University professors and lecturers on the science subjects, and Mr. Prosper H. Marsden, Ph.C., F.C.S., as lecturer on pharmacy.

## MANCHESTER.

*Victoria University, Pharmaceutical Department*.—The professorial staff comprises Dr. A. Schuster, F.R.S. (physics), Professors H. B. Dixon, F.R.S., and W. H. Perkin, F.R.S. (chemistry), Dr. R. B. Wild, M.Sc. (materia medica and pharmacy), Dr. F. E. Weiss (botany), and Mr. James Grier, Ph.C., M.Sc. (pharmacognosy and pharmaceutical chemistry). The courses for the Minor or Major extend over one winter session (October to April), fee 15*l.* 15*s.* (summer session for a further fee, 4*l.* 4*s.*). Students who desire to obtain the degree of B.Sc. in the Victoria University, and who have passed the Matriculation examination, may so arrange their courses for the Minor and Major pharmaceutical examinations as to include the other subjects required. For further particulars apply to the Dean. The requirements are here outlined:

Candidates for the ordinary degree of B.Sc. must present certificates of having attended (i) during their first year courses in chemistry, physics, botany, and in the pharmaceutical laboratory; (2) during the second year courses in chemistry (final standard), botany (final standard), and materia medica (advanced); (3) during the third year further approved courses in chemistry and in any two of the following: Physics, electro-chemistry, pharmacology, bacteriology, toxicology, analysis of food and drugs. Candidates must present themselves for the Intermediate examination at the end of their first year of study after passing the Matriculation examination.

The subjects of the Intermediate examination are: (i.) Physics with practical work; (ii.) chemistry with practical work; (iii.) botany with practical work; (iv.) a practical examination in the pharmaceutical laboratory.

The subjects of the Final examination are: (i.) Chemistry; (ii.) Two of the following: Botany, materia medica, physics, history of chemistry, electro-chemistry, pharmacology, bacteriology, toxicology, analysis of food and drugs.

At the end of the first year students could present themselves for the Minor, and at the end of the second year for the Major examination.

*Manchester College of Pharmacy*, 225A and 227A Oxford Road.—Director, Mr. Charles Turner, Ph.C., F.C.S. The year's work for the Minor is divided into the following courses: August 20 to January examination (fee 10*l.* 10*s.*), October to the April examination (fee 14*l.* 14*s.*), and January to the July examination (fee 14*l.* 14*s.*). On August 20 a special class for the October examinations begins. Local classes are held on Tuesdays and Wednesdays from 2 to 10 p.m., and evening classes on Mondays and Wednesdays from 7 to 10 p.m. Fees, 15*s.* a month, or 4*l.* 4*s.* six months.

*Northern College of Pharmacy*, Burlington Street, Manchester.—Principals, Mr. Geo. Clayton, Ph.C., F.C.S., and Mr. F. Lawson, Ph.C., B.Sc. For the Minor four-months' and seven-months' courses commence simultaneously on September 4, and other courses begin in October, July, and April. Fee, 14*l.* 14*s.* six months, 9*l.* 9*s.* three months. For the Major courses begin in January and April (fee, 6*l.* 6*s.*), and September (fee, 7*l.* 7*s.*). Afternoon, Once-a-week, and Evening courses are also held at hours which suit those holding part-time situations or engaged all day. The fees vary according to the length of tuition taken, as to which see the College prospectus, to be obtained free on application.

## NEWCASTLE-ON-TYNE.

*North of England School of Chemistry and Pharmacy*, 55 Northumberland Street.—Principals, Mr. F. R. Dudderidge, Ph.C., F.C.S., and Mr. J. G. Murdoch, Ph.C. Four sets of Minor classes are held, viz.: Full-time day class, fee 8*l.* 8*s.*; evening classes, three times a week, fee 3*l.* 3*s.*; afternoon classes (Wednesday or Thursday), fee 3*l.* 3*s.*; special weekly class for junior assistants and apprentices. Day and evening classes for the Major, fees 7*l.* 7*s.*



(day) and 3*l.* 3*s.* (evening). Terms commence in October, January, and April, and a short course for the October examinations commences on August 13.

*The Durham College of Science* affords facilities for instruction in the scientific subjects of the Minor and Major.

#### NOTTINGHAM.

*School of Pharmacy*, 13 Victoria Street.—Principal, Mr. S. Royce, Ph.C. A course for the Minor commences on September 4, and other courses at suitable times; fee 8*l.* 8*s.* (three months), and so on according to length. Evening classes are held on Monday and Friday from 8 to 10 P.M., and practical work classes on Thursday from 2 to 5 P.M.

#### SHEFFIELD.

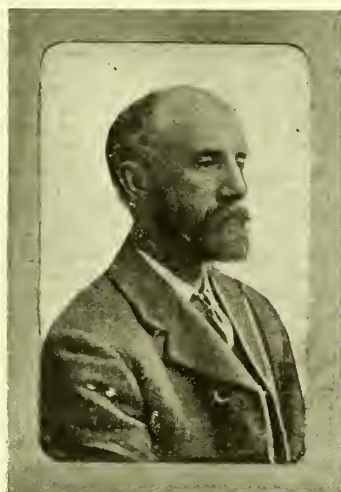
*The University* provides instruction in botany, chemistry, and materia medica (lecturer, Mr. John Austen, Ph.C.).

#### SOUTHAMPTON.

*Hartley University College*.—Principal, Dr. S. W. Richardson, D.Sc. Courses of chemistry, botany, and physics suitable for the Minor and Major examinations can be arranged for.

#### WOLVERHAMPTON.

*Municipal Science and Technical School*.—Day classes in chemistry and physics, and evening classes in chemistry, physics, and botany, are held. Special arrangements are



GEORGE BROWN  
(Pharmacy)



WILLIAM N. ALLEN  
(Pharmacy)



JAMES GUILER  
(Druggists' Exam.)



HENRY O'CONNOR  
(Assistants' Exam.)



DAVID S. JARDIN  
(Chemistry)



E. WHITLEY ALLSOM  
(Materia Medica and Botany)

#### Pharmaceutical Examiners in Ireland.

*University College*.—Classes are held in all the subjects required for the Minor and Major, and the necessary work is arranged for in the chemical, botanical, and physical laboratories in evening classes. The fees range from 5*s.* to 15*s.* the course. Apply to the Secretary, Mr. P. H. Stevenson, for prospectus.

#### PLYMOUTH.

*Municipal Science Schools*.—The courses in chemistry, botany, physics, materia medica, and practical chemistry are suitable for pharmacy students. See the Directory for details.

#### READING.

*University College School of Pharmacy*.—Principal, Mr. W. M. Childs, M.A. A complete course of instruction for the Minor is here provided, extending over three terms. Fee, 18*l.*

made for pharmaceutical students. For other particulars address the Registrar.

#### SCOTLAND.

##### ABERDEEN.

*Robert Gordon's College School of Pharmacy*.—Head Teacher, Mr. Gilbert Simpson, Ph.C. A term for the October Minor and Major examinations begins on August 27 (fee, 3*l.* 3*s.*), and ordinary courses begin on October 8, January 7, and April 8. Fee for the latter, 7*l.* 7*s.*, and 6*l.* 6*s.* for any ordinary term after the first. Evening classes are also held, fee 3*l.* 13*s.* 6*d.*; the next begin on September 26.

##### EDINBURGH.

*Royal Dispensary and School of Pharmacy*, 21 West Richmond Street.—Principal, Mr. William Duncan, Ph.C.,



F.C.S. Courses of instruction for the Minor begin in October, January, and April. Fee, 8l. 8s. per term, and shorter terms at proportional rates. The same for the Major. Evening classes begin on September 3, and cover the same ground as the day classes. Fee, 3l. 3s. for the three-months' course. At the latter the work is thus arranged: Mondays, chemistry and pharmacy; Tuesdays, botany and materia medica; and Thursdays, practical chemistry, beginning each night at 8.30.

*Central School of Pharmacy*, 26 Clyde Street.—Principal, Mr. W. B. Cowie, Ph.C., F.C.S. Short courses of instruction for the Minor and Major examinations begin on August 20, and the Winter Session opens on October 5, other terms commencing in January and April 1907. Day and evening classes are held. Fees, day, 8l. 8s.; evening, 3l. 3s. per term.

*Heriot-Watt College*, Chambers Street.—Here botany, chemistry (Professor John Gibson), physics, and materia medica (lecturer, Mr. William Duncan) are taught in evening classes, and the first three in day classes.

#### GLASGOW.

*Glasgow School of Pharmacy*, 180 West Regent Street.—Principal, Mr. John Lothian, Ph.C. A short course for the October examinations begins on August 13 (fee, 4l. 4s.). Full three months' courses for the Minor and Major begin on October 1 and January 2 and April 2, 1907, fee 8l. 8s. Evening classes begin on October 1, fee 1l. 1s. (one evening per week) per quarter. Afternoon classes are held by arrangement.

*West of Scotland College of Pharmacy*, 157 St. Vincent

Street.—Principal, Mr. Thomas S. Barrie, Ph.C., F.C.S. A tutorial course for the October examinations begins on August 13, fee 4l. 4s. Ordinary full-day courses begin in October, January, and April, fee 8l. 8s. Afternoon (fee 2l. 2s.) and evening classes (fee 2l. 2s. for two evenings per week) are also held.

#### IRELAND.

##### DUBLIN.

*Pharmaceutical Schools of Chemistry, Botany, and Materia Medica*, 67 Lower Mount Street. Practical Chemistry Class, Director Professor P. Kelly, M.P.S.I.; Professors of the Botany and Materia Medica School, Mr. A. H. Laird, B.A., and Dr. J. S. Ashe, M.P.S.I. The fees for the courses in accordance with the regulations of the Society are: Practical chemistry (six months), 6l. 6s.; botany and materia medica (three months), 2l. 2s. The winter course begins on October 1. The practical chemistry class is held on Mondays, Wednesdays, and Fridays from 8 to 10 p.m. The School of Botany and Materia Medica classes are held on Tuesdays and Thursdays at 8 p.m., with occasional Saturday demonstrations. For full particulars apply to the Registrar, 67 Lower Mount Street, Dublin.

##### BELFAST.

*Municipal Technical Institute*.—Pharmaceutical Department Staff: Mr. S. Templeton, Assoc.R.C.Sc., F.I.C.; Mr. T. Harper, L.P.S.I., etc. Full courses begin on September 10, and other courses in practical chemistry, botany, and materia medica on January 7, 1907. Fees: Chemistry, 10s.; practical chemistry (100 hours), 1l. 10s.; botany, 7s. 6d.; materia medica, 7s. 6d.; pharmacy, 10s.

## Supplementary Notes for Pharmacy Students.

### THE STUDENT'S LIBRARY.

A PLETHORA of books is bad for the learner. He should select one book, and not more than two, in each subject, and stick to them for home reading. When he gets to a college he will find that the principal recommends special books in certain subjects, in some cases written by himself, and not as a rule costly. Nevertheless, there are some books which are recommended by the majority of teachers, or which are common to the schools. From a dozen of the school circulars we have compiled the following brief list of

#### FAVOURITES FOR THE MINOR.

*Botany*: Lowson's, published by Clive, 6s. 6d.

*Chemistry*: Newth's "Inorganic," published by Longmans, 6s. 6d.

Perkin and Kipping's "Organic," published by Chambers, 6s. 6d.

Muter's "Analytical," published by Baillière, 6s. 6d.

*Dispensing*: MacEwan's "Art," published by THE CHEMIST AND DRUGGIST, 6s.

*Materia Medica*: Southall's, published by Churchill, 7s. 6d.

*Pharmacy*: The British Pharmacopœia, published by Spottiswoode, 10s. 6d.

Lucas's "Practical," published by Churchill, 12s. 6d.

*Prescription Reading*: Ince's "Latin Grammar," published by Baillière, 5s.

*Physics*: Everett's, published by Blackie, 3s. 6d.

We think we could improve upon this little lot, but the selection is one by a quite decided majority, and the student who is equipped with such books and reads and uses them well has nothing to fear from the examiners and has much to commend him to the public. He will also need a book on chemical calculations; Dr. Leonard Dobbin's, published by Thin at 1s., is serviceable; and in regard to pharmacy law and other legal matters about which candidates are expected to know everything, the *C. & D. Diary* or "Opening a Pharmacy" (*C. & D. Offices*, 2s.).

#### FOR MAJOR STUDENTS.

The schools do not all give lists of books. The above list has to be supplemented so far as botany, chemistry, and materia medica are concerned. For practical botany one needs either Bower's (Macmillan, 3s. 6d.) or Scott's (Black, 3s. 6d.), with a book on microscopy, such as F. S. Scales's (Baillière, 3s.). In chemistry a more intimate knowledge of theory is requisite, and that one finds in Meyer's "Outlines" (Longmans, 9s.), which is rather stiff reading, but Scott's "Theory" (A. & C. Black, 5s.) is simpler. Everett's "Physics" may be supplemented by Draper's

"Light" (Blackie, 4s. 6d.), Edser's "Heat" (Macmillan, 6s.), and Poyser's "Advanced Electricity and Magnetism" (Longmans, 4s. 6d.), these being the "Square" choice, where also Clowes and Coleman's "Elementary Quantitative Analysis" (Churchill, 4s. 6d.) is used. For materia medica Greenish's book is used (Churchill, 15s.), or White and Humphrey's "Pharmacopœia" (Kimpton, 10s. 6d.).

### OPPORTUNITIES FOR STUDENTS.

THOSE who have entered upon the road that leads to qualification under the Pharmacy Acts of Great Britain and Ireland do not find the way paved with golden opportunities in the shape of bursaries, scholarships, and prizes. Scholarships do not number half a dozen, and their annual value does not amount to 200l., this without reckoning a few which are awards to the most distinguished students of the Pharmaceutical Society's School in Bloomsbury.

In Scotland it is open to students who matriculate at one of the four universities, and who proceed to the curriculum for a degree, to obtain monetary aid from the *Carnegie Trust*. To students of pharmacy this does not mean much, because the only degree pertaining to their calling is B.Sc. Pharm. of the Glasgow University; the proposed similar degree of Aberdeen has been abandoned. The Carnegie Trust does not give scholarships as the result of competition, but aids students privately by supplementing their own efforts to support themselves while studying at the University. Full particulars may be obtained from the Secretary of the Carnegie Trust, Edinburgh. We subjoin concise particulars of the scholarships and prizes which are open to students of pharmacy as such:

#### JACOB BELL SCHOLARSHIPS.

Instituted in 1860 as a memorial of Jacob Bell, the originator of the Pharmaceutical Society of Great Britain. Two are awarded annually, each comprising 30l. in cash, free education for a year in the School of Pharmacy, Bloomsbury Square, and 2l. 10s. worth of books. If before the end of the year a student passes the Minor examination, he may proceed to the Major course in the next year free, should the Pharmaceutical Council agree. The scholarships have been held by many distinguished pharmacists. The first scholar (1861) was William Augustus Tilden, now Professor of Chemistry at the Royal College of Science, a D.Sc., F.R.S., and Past President of the Chemical Society. The scholarships are open only to student-associates of the Society not less than twenty nor more than twenty-two years old. Applicants must give notice of their intention to compete to Mr. R. Bremridge, 17 Bloomsbury Square, London, W.C., on or before June 1, 1907, obtaining the necessary forms and instructions from him well before then.



The examination is held on the third Tuesday of June at Edinburgh, London, and Manchester, the subjects being Latin, French or German, English, arithmetic, botany, chemistry, and pharmacy.

#### MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP.

Value about 26*l.*, and open to student-associates of the Pharmaceutical Society who have been three years with a registered chemist in Lancashire, Cheshire, or the High Peak division of Derbyshire. Examination on the same as for the Bell Scholarship, and other conditions similar, but no free education. The scholar may attend the School of Pharmacy or the Pharmaceutical Department of Victoria University. Applications to Mr. Bremridge.

#### FAIRCHILD SCHOLARSHIP AND PRIZES.

One scholarship (50*l.*) and four prizes (5*l.* each), awarded by a committee of trustees on behalf of the donors (Messrs. Fairchild Bros. & Foster, London and New York) as the result of an annual examination. Open to any person in England, Ireland, Scotland, and Wales who is registered as a student of pharmacy and has fulfilled the condition of three years' (Great Britain) or four years' (Ireland) service required for the qualifying examination in the respective countries. Competitors must not be less than twenty nor more than twenty-two years old. The examination is in elementary chemistry, elementary materia medica, practical pharmacy and prescription reading, and elementary business knowledge. The questions set in the 1906 examination were printed in the *C. & D. Coloured Supplement*, July 7, 1906. The examination is held in Cardiff, Dublin, Edinburgh, London, and Manchester in July, and applications have to be made to the Secretary, Mr. A. E. Holden, Bath House, Holborn Viaduct, London, E.C., before June 1, 1907. Particulars can be obtained from him. The competitor who gets the highest aggregate of marks receives the scholarship of 50*l.*, with which his fees at any school selected by him are paid, and he receives the rest of the money for maintenance while studying or examination-fees. The course of study must not be less than three months. This year's scholar is an Irish student, Mr. G. T. Wilson, Dublin. The 5*l.* prizes go to each of the countries, the best in each getting them, except in the country that the scholarship goes to, where the second best gets it. The nationality of a competitor is decided by the country in which he is registered as a student, and not by the centre at which he is examined.

#### FREE-TUITION SCHOLARSHIP.

The South London School of Pharmacy, 325 Kennington Road, London, S.E., offers for competition in September each year a free-tuition scholarship, tenable at the college for one year. Full particulars may be obtained from the Secretary, Miss G. Duckworth.

#### CORNER FOR STUDENTS' PRIZES.

THE CHEMIST AND DRUGGIST awards monthly book prizes to students who perform the analytical exercises set monthly by Dr. Leonard Dobbin, F.R.S.E., conductor of the Corner for Students. Besides, tournament prizes and parchment certificates are awarded to the best three students who send in monthly reports from November to April. These exercises enable beginners to test their progress in qualitative chemical analysis, and the advice they receive month by month from Dr. Dobbin is of great value both in assistance and encouragement.

#### FOR IRISH PHARMACISTS.

The Council of the Pharmaceutical Society of Ireland award annually a gold medal and a silver medal to candidates in the Pharmaceutical Licence examination who pass the examination and attain a certain standard of marks.

#### OTHER AWARDS.

The following are in the gift of the Council of the Pharmaceutical Society of Great Britain:

**REDWOOD SCHOLARSHIP:** A Research Scholarship offered biennially in April to pharmaceutical chemists, value 60*l.* in cash, and free provision in the Society's research laboratory.

**BURROUGHS SCHOLARSHIP:** Similar to the Redwood, with 50*l.* in cash.

**SALTERS RESEARCH FELLOWSHIP in Chemistry:** Annual value in cash 100*l.*

**PEREIRA MEDAL:** Those who are members of the Society at the time of passing the Major examination are entitled to enter for the following prizes at the competition in April next following the date on which they passed the examination:

*First Prize.*—Pereira Medal, and books value 5*l.*

*Second Prize.*—The Society's silver medal.

*Third Prize.*—The Society's bronze medal.

The examination is in Major subjects.

**HERBARIUM PRIZE:** Silver and bronze medals are annually offered for the best herbarium, collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between January in one year and July in the year following.

Further particulars in respect to all these may be obtained from Mr. Bremridge.

## CANDIDATES' EXPERIENCES.

### APOTHECARIES' ASSISTANTS'

I PRESENTED myself punctually to time at the Society's premises in Water Lane, Blackfriars, and, after a short period of waiting, was shown into the dispensary for practical work. My paper read as follows:

Ol. jecoris aselli	...	...	...	3j.
Syr. toltan.	...	...	...	3i.
Pulv. acaciae	...	...	...	3ij.
Aq. ad	...	...	...	3iv.

Ft. emulsio.

Sig.: 3ij. t.d.s. p.e.

Pulv. rhei	...	...	...	gr. iij.
Hyd. c. creta	...	...	...	gr. j.

Ft. pulv. j. Mitte iv.

j. h.s.s.

The bottle and box were to be labelled, wrapped up, and addressed to myself.

When I had finished the dispensing I was asked questions regarding dispensing difficulties and how to overcome them, and also got several words to parse and Latin prescriptions to translate. This concluded the morning's work, and I was told to return again in the afternoon for materia medica and chemistry. My first subject in the afternoon was materia medica and pharmacy. I had to recognise nux vomica seeds, conium-fruit, belladonna-root, lead acetate, red iodide of mercury, calomel, and sublimed sulphur, and was asked the doses, preparations, etc., of each. A number of prescriptions were given me to comment upon. Some contained incompatibilities and others over-doses. One, which seemed to me rather peculiar, was as follows:

Mrs. Smith's Baby.

Pil. sapon. co.	...	...	...	gr. v.
-----------------	-----	-----	-----	--------

Ft. pil. h.s.s.

I said that, first, a pill could not be given to a baby; and, secondly, it was unsafe to give so large a dose of opium to a child. After being asked some more doses I was told to go. Soon after I was called to chemistry. The examiner asked me the preparation, properties, etc., of sulphur dioxide; the names, formulæ, and preparation of the various oxides of lead and their respective reactions with nitric acid; the preparation of acetic ether and ether, and the explanation of the various reactions. This concluded the examination, and the next day I learned that

I WAS THROUGH. (82/72).

### THE MINOR.

WITH mixed feelings I stood among a small group of anxious students, each of our faces betraying the severe strain undergone before we reached the unhappy Horse Lane of 36 York Place, when suddenly an old grey head was thrust out at a door, and a pair of arms waved frantically to intimate to us that the examiners were ready. After the usual signing of names I was sent to chemistry, and was honoured by having as examiner in that subject the great Dr. Gibson. He handed me a small bottle containing a salt for analysis. It happened to be one of the few insoluble salts, so I was obliged to appeal to him for platinum foil on which to fuse it. On further analysis I proved the salt to be barium sulphate and sodium chloride. I handed in my report, and was rewarded by a smile from the generous doctor. Then I was given a solution of HNO<sub>3</sub>, the percentage of which I succeeded in determining satisfactorily. In the afternoon I had Mr. Fraser in pharmacy, and the first preparation to be made was two dozen pills, each containing 4 grains of ferri carb. sacch. and 2 mins. of liq. arsenicalis. Then ½ oz. of sodium benzoate, also 1 oz. of unguentum zinc. oleat. containing 5 per cent. of phenol; half-a-dozen suppositories with 3 grains of ext. hyoseyam. in each, and a simple mixture of ferri amm. cit. and liq. strychnine. I was somewhat bewildered at getting sodium benzoate to make, as I had never made it at the college, nor had I ever heard of any student in former exams. being asked to make such a preparation; however, by neutralising the benzoate acid with crystals of sodium carbonate, and evaporating the solution on a water-bath, I obtained a nice result. Mr. Fraser was exceedingly obliging and most gentlemanly.

On the second day of my exam. I was first sent to Mr. Merson for prescription-reading and doses. In doses he asked about twenty questions, all of which I managed to answer, until he trotted out "Dose of vin. opii." Not remembering any dose in regard to that substance, I remained silent, although the question was repeated several times, interlarded with such questions as vin. ipecac., vin. antimon., vin. colchici, all of which I answered correctly. Next came botany with Professor Traill. My slide consisted of a transverse section of a dicotyledonous stem, showing no secondary thickening. The fresh specimens I had to recognise were *Taxus baccata*,



*Pinus sylvestris*, *Digitalis purpurea*, etc. Then he asked me all about carbon assimilation, the drupe, and leguminous plants. I next had Mr. Boa, with his usual questions about the poison laws of pharmacy. In materia medica I had Mr. Fraser again, who questioned me about gums and waxes with their melting-points, adulterations, etc. He then turned to herbs, showing me twice a specimen of *Digitalis purpurea*. Last of all came chemistry with Dr. Coull, whose questions for the most part related to organic chemistry, with a simple problem about the amount of KClO<sub>3</sub> required to yield 100 lb. of oxygen.

On the whole I found the examiners both obliging and courteous. Utterly exhausted, but with hopes realised, I left the examination-hall with the certificate for the precarious Minor in my possession, having the additional satisfaction of knowing that in this summer I had gained an honours certificate in zoology, in connection with my work for the First Professional exam. in medicine. F. H. (89/74.)

### THE IRISH LICENCE EXAMINATION.

AFTER paying my five guineas and depositing the necessary declarations as to apprenticeship, lectures, etc., I was duly asked to present myself at 67 Lower Mount Street, Dublin, at 10.30 A.M. on the day appointed. There were twenty-two others. At 11 o'clock we were all placed, and started on materia medica and botany, Dr. E. Whitley Allsop being the examiner in these subjects. The paper was generally voted a reasonable one. It involved a tremendous amount of writing, but the time allowed—two hours—was ample. At half-past two work was resumed with the chemistry paper, which calls for no special comment, except that it was fair and satisfactory. In the afternoon we also had the pharmacy paper, set for the first time by two examiners. This paper was a decidedly easy one, and appealed rather to the common-sense and intelligence of the candidate than to his memory. This is a welcome change, and pharmacists are hoping that the "powers that be" will not revert to the old order, when the most successful candidate was generally he who had the greatest facility for committing to memory specific gravities and boiling-points, to be rapidly unloaded after he had obtained his diploma. This finished the first day's work, and I wended my way homewards, well satisfied with my labours.

Next morning I was ushered in to practical chemistry, and found on my bench a bottle containing a solution to be analysed qualitatively and quantitatively, and a small chip box containing, I was told, a "B.P. organic substance" to be identified. Neither of these presented any great difficulty. The solution I found to contain ferrous sulphate, and the "substance" to be salol. The examiner, Mr. David S. Jardin, is of a cheery disposition, and puts candidates at their ease at once. He is very popular.

After chemistry was practical pharmacy, there being again, for the first time, two examiners. The supervision was very stringent, the work given to candidates very unevenly balanced, and the arrangements very bad. These may appear rather sweeping statements, but I think I can justify them. I append two sets of prescriptions, which may be taken as typical of the unevenness I mention. The quantities may not be the actual quantities given, but in all other respects the prescriptions are just as they were given to the candidates in my immediate vicinity:

(1)		(2)	
Potass iodid.	... gr. iv.	Ferri et ammon. cit...	gr. xv.
Ft. pil. Mitte.	xij.	Inf. calumbæ ad.	... ʒiv.
Butyl-chloral hyd....	0.5 grm.	Ft. mist.	
Spt. chlorof.	... 0.02 c.c.	ʒss. ter in die.	
Aquam ad	... ʒij.	Six cachets containing some	
Ft. haust. Mitte.	iv.	simple powder.	
Make 1½ oz. ung. resinæ B.P.		Pil. col. co. xij. gr. v. to	
and supply calculations.		be rolled from the mass.	

I think most pharmacists will agree that these two sets of prescriptions are not equal tests of ability. The time given (an hour and a half) is ample, provided the candidate has not to look about for the ingredients, as a great many candidates had to do. I spent fifteen minutes looking for acid. sulph. aromat., and was then told to use acid. sulph. dil. Another candidate, who found on his prescription "Ung. hyd. amm. ʒi. make," found, after wasting a considerable amount of time, that there was no hyd. amm. chlor. and no ung. paraffini, and was then told to make ung. paraffini ʒi. instead.

This subject completed finished our second day's work, and with it vanished a good many of our hopes.

At ten o'clock on Thursday I found myself with Mr. George Brown for oral pharmacy. Mr. Brown never gives the slightest idea as to whether the answers are right. These were some of the questions: "How is zinc ointment made?" "Why use benzoated lard; why not paraffin ointment?"

"Why not use benzoated lard with boric ointment?" Then four or five prescriptions, some containing overdoses, to be read in Latin and in English. "How is alcohol made?" "Are all sugars susceptible to fermentation?" "Yes." "Are you sure?" "Yes, but not to vinous fermentation." "Mention one which is not susceptible to vinous fermentation." "How many soaps in the B.P.?" "What are they chemically?" "Percentage of moisture?" "How would you make argent. nit. into pills?" Doses of tr. nucis vom., hyd. perchlor., etc.; various percentages, etc. "Why is tr. card. co. not percolated?" Finally, "What is that?"—pointing to a specific-gravity bottle.

I was next ushered into Mr. D. S. Jardin for oral chemistry. He greeted me with a handshake and a cheery "Good morning." "Do you know Charles's Law?" "What scale is it worked on?" "Can you convert degrees C. to degrees F.?" Then followed a number to be converted. "Draw three diagrams representing the thermometric scales and graduate them." "How did Charles arrive at this figure?" "Do you know anything about Avogadro?" "The difference between a law and a hypothesis?" "What is diffused daylight?" Then followed a few questions about the metals of the ammonium-carbonate group, and "That will do, thank you." I was immediately conducted to Dr. E. Whitley Allsop for materia medica and botany. "What are these?" "The seeds of *Croton Tiglium*." "What percentage of oil do they contain?" "What is this?" "Ferri et quin. cit." "What percentage of iron and quinine?" "What condition is the iron in?" "How would you detect ferric from ferrous iron in a solution?" Then back again to botany. "What is this?" "A multicostate leaf." "And these?" "The pyxidial of hyoscyamus." "And these?" "The phyllodes and bipinnate lamina of acacia." Then followed a long list of specimens to be recognised, including kino, eucalyptus gum syr. Eastoni (very old), orange-peel, and several botanical specimens which I failed to recognise.

Dr. Allsop is a very thorough examiner, and gives very little time to think. His motto seems to be, "If you don't know it, say so," and he tells you that from time to time. I was not at all satisfied with my answering in his oral, but I passed in it anyway.

Net result—"Ploughed."

Rhus Tox. (18/60.)

### PHARMACY APPOINTMENTS.

COMPARATIVELY few Government appointments are open to chemists and druggists or pharmaceutical chemists as such, and the best of them are rarely thrown in the market, being obtained by exceptionally competent young pharmacists who are recommended to those "in the know." Frequently it is a case of the man and the opportunity meeting casually. The following notes briefly indicate the available positions:

**COLONIAL DISPENSERSHIPS.**—Appointments in the West Indies and elsewhere, for which the Major qualification is usually required, as some analytical work is attached. The appointments are worth 200*l.* a year on the average, and vacancies are advertised as they occur.

**ARMY COMPOUNDERS** are non-commissioned officers in the Royal Army Medical Corps, who pass examinations in pharmacy, materia medica, posology, and similar subjects conducted by the medical officers. It is necessary to enlist as a private and work up to the position (corporal) which entitles a man to enter for the examination. Particulars may be obtained at a recruiting depot.

**HOSPITAL DISPENSERSHIPS.**—In all the largest hospitals in Great Britain the Pharmacy Act qualification is requisite for the appointment of head dispenser or pharmacist, and Major men hold the best appointments with salaries of 200*l.* a year upwards. The Apothecaries' Assistant's certificate at least must be held by subordinate dispensers in England and Wales, and it suffices for the dispensership in smaller hospitals. Vacancies are usually advertised, and for the best appointments (a few of which have lectureships attached) ability other than examination has to be proved.

**POOR-LAW DISPENSERS** for Unions under the Local Government Board of England are open to those who hold certificates as licentiates or assistants of the Society of Apothecaries, London; Army compounders of medicines, chemists and druggists (G.B.), or pharmaceutical chemists (Ireland). Salaries begin at 120*l.*, and can be increased by 10*l.* every fourth year until a maximum of 180*l.* a year is reached in the metropolitan area. In the provinces there is no fixed limit, the salary being fixed and varied by the Guardians of each Union, with the sanction of the Local Government Board. Dispensers receive pensions on retirement through age or ill-health, these being provided by a deduction from the salaries.

DISPENSERS under the Metropolitan Asylums Board receive salaries of 100*l.* a year, rising by 5*l.* annually to 130*l.*, with dinner and tea daily.



PRISON DISPENSEESHIPS are open to chemists and druggists between twenty-four and thirty years of age. It is necessary to join as a warder and wear uniform. Residence is provided, and the salary is from 105*l.* to 140*l.* a year.

NAVAL HOSPITAL DISPENSEERS.—In the Royal Navy afloat any dispensing required is done by the ship's medical officer. There are naval hospitals at Haslar (six dispensers), Plymouth (4), Haulbowline (1), Chatham (3), Malta (2), Gibraltar (1), and Hong-Kong (2). The appointments are open to those holding the Major or Minor certificates of the Pharmaceutical Society of Great Britain or the certificate of competency (*i.e.* the pharmaceutical licence) granted by the Pharmaceutical Society of Ireland. Salaries 110*l.* to about 300*l.* Applications for vacancies (in anticipation or when they are advertised) should be addressed to the Director-General, Medical Department of the Navy, 18 Victoria Street, London, S.W. Applicants must not be less than twenty-one nor more than twenty-eight years of age. Entry is by limited competition, conducted by the Civil Service Commissioners of those candidates selected by the Director-General, the subjects being:

- (1) Pharmaceutical chemistry.
- (2) *Materia Medica*, including the British Pharmacopœia and its Appendix, poisons and their antidotes, dosage of remedies, and preparation of antiseptic solutions.

- (3) Recognition of chemicals and drugs employed in medicine.
- (4) Practical pharmacy, prescription-reading, and detection of errors in doses.

In addition to salaries, free quarters are provided, and allowances made to those serving on foreign stations to meet the increased cost of living. Dispensers get a month's holiday yearly, and those on foreign stations may reserve their holiday from year to year so as to obtain a longer period of absence, but the regulations say:

Such reserved leave cannot be claimed as a right, and shall not in any case exceed six calendar months, and if granted it will be on the distinct understanding that arrangements can be made for the performance of the officer's duties without putting the public to any expense in providing substitutes. This concession is not intended to authorise any accumulation of leave with the object of an abnormal period of leave being reserved with a view to its being taken on final relief from a foreign appointment or prior to retirement.

Dispensers are included in the list of salaried officers, with all the advantages pertaining thereto, and are entitled to pensions under the terms of the Superannuation Acts—that is, up to forty-sixtieths of the pay received at the end of forty years' service. Dispensers abroad have during the past year been deprived of one salaried officers' advantage—*viz.*, first-class accommodation on board steamers out or home.

## The Practice of Medicine.

TO become a member of the medical profession, a doctor in common parlance, it is necessary

- (1) To pass a preliminary examination.
- (2) To enter at a medical school and study professionally for five years.
- (3) To pass a qualifying examination in medicine, surgery, and midwifery.

The standard of the examinations is laid down by the General Council of Medical Education and Registration of the United Kingdom, that body having been created for the purpose by the Medical Act, 1858. The General Medical Council, as it is called for short, is not an examining body, but regulates the standard of examination in the whole course of the medical studies, and finally adds the names of properly qualified persons to the Medical Register. It may here be noted that registration is not compulsory, but it is necessary before fees for medical attendance can be recovered in a court of law, and also before a medical man can hold public appointments. The General Medical Council has rather wide powers: one, which consists in adjudicating in cases of unprofessional conduct, is similar to the functions of the High Court of Justice. Power is possessed by the Council to apply to any examining body for full information as to the scope of the examinations and to send inspectors to watch the course of an examination. The Privy Council is the body to which the General Medical Council owe allegiance, and in certain eventualities the Privy Council can act in place of the G.M.C.

### The Preliminary Examination

must be passed before commencing medical studies, and the student must have been registered with the General Medical Council, as any part of the medical course taken before registration does not count in the required curriculum. The Registrars, to whom students must apply for registration, are: *England and Wales*, Mr. Henry E. Allen, LL.B., B.A., 299 Oxford Street, London, W.; *Scotland*, Mr. James Robertson, 54 George Square, Edinburgh; *Ireland*, Mr. Richard J. E. Roe, 35 Dawson Street, Dublin. The requirements for registration as students and as general medical practitioners are embodied in two official publications—*viz.*, "Resolutions of the General Medical Council on (a) Professional Examination; (b) Professional Education" (price 6*d.* each); "Regulations in regard to the Registration of Medical and Dental Students" (price 6*d.*). These are sold by Messrs. Spottiswoode & Co., Ltd., 54 Gracechurch Street, London, E.C.

The requirements as to the subjects of general education to be included in the recognised Preliminary examinations in Arts are:

- (a) *English*.—Grammar, Paraphrasing, Composition, questions on English History and Geography.
- (b) *Latin*.—Grammar, Translation into English from unprescribed Latin books, Translation into Latin of a continuous English passage, and of short idiomatic English sentences.

(c) *Mathematics*.—Arithmetic; Algebra, including easy quadratic equations; Geometry, including the subject-matter of Euclid, Books I., II., III., and simple deductions.

(d) One of the following subjects:

(a) *Greek*.—Grammar, translation into English from unprescribed Greek books, translation into Greek of short idiomatic English sentences.

(b) *A Modern Language*.—Grammar, translation into English from unprescribed books, translation of a continuous English passage, and of short idiomatic English sentences.

Latin is obligatory, the only exception being that in the case of natives of India or other Oriental countries, whose vernacular is other than English, an examination in a classical Oriental language may be accepted as equivalent to an examination in it.

A list of the examining bodies whose examinations are recognised as a medical Preliminary is given in the handbook referred to above. These include the matriculation of the University of London, the College of Preceptors' (medical Preliminary, the subjects to be passed at one time, and examination for a first-class certificate, the subjects to be passed at one or two examinations), and the Junior Local examinations of Cambridge and Oxford (if the subjects passed fulfil the G.M.C. requirements). It is obvious that if the student intends taking a medical degree at a university he will require to pass the matriculation examination demanded by the particular university at which he proposes to study. It is thus important that the student shall at the outset of his career decide upon the course he intends to pursue. If he is resident in London, the Matriculation examination of the University of London should be taken, as this examination not only satisfies the requirements of the double diploma, but enables the student to proceed to the degree of M.B.

A student must be sixteen before he can be registered as such. The best time to begin medical studies is October, but preparatory work could be done at other times in chemistry, physics, anatomy, and biology in cases where students join a medical school. Such students could, moreover, compete for the entrance scholarships which are awarded in connection with most of the medical schools.

### Medical Degrees

The requirements as to medical degrees and diplomas will now be briefly stated. The conditions of entry laid down by the universities vary. First there are the residential Universities, such as Oxford and Cambridge, which require residence in a college in Oxford or Cambridge as well as attendance at the University classes for a stated period. A second kind is exemplified by the Scotch and other English provincial Universities, where attendance in the classes for a stated period is requisite, but the student is not required to live in the University. The third kind, of which the London University is the type, admits to its degrees students from any approved school or college. One may while studying for a university medical degree simul-



taneously prepare for a registrable diploma either of the Royal Colleges of Physicians and Surgeons or that of one of the Apothecaries' Societies. These are examining bodies who by law may grant certificates or diplomas of competency. These bodies adopt, either entirely or with slight modifications, the conditions laid down by the General Medical Council, so that the fact that a person has passed a Preliminary examination recognised by the Council suffices, with the curriculum, to take the student forward to the examinations of any of the Royal Colleges, whereas the Universities demand fulfilment of their own conditions. These may be considered to include all that the General Medical Council lays down and something special in addition, as the following examples show.

**OXFORD UNIVERSITY.**—The degrees of Bachelor of Medicine and Surgery are granted only to those who have taken the B.A. Oxon. This means residence at Oxford for three academical years, and passing the examinations, which comprise:

*Responsions; First Public Examination* (Scripture and Pass School or Honour School in Greek and Latin); *Second Public Examination* (Three of certain groups of subjects, two of which—but not more—may be taken from the following: Mechanics and Physics, Chemistry, Zoology, and Botany).

An alternative examination is provided. By taking the B.A. degree through the Natural Science School the curriculum extends to seven years, the last two of which are usually spent in clinical work in a London medical school.

**PROVINCIAL UNIVERSITIES.**—Under this term are included the Scotch Universities, and those of Birmingham, Durham, Leeds, Liverpool, Manchester, Sheffield, and Wales, where graduation in Arts is not a preliminary to a medical degree (although, of course, in every case an Arts degree absolves the student from further proof of preliminary education). In each of these universities it is necessary to pass an Entrance examination, or produce equivalent certificates, and in no case does proof of registration as a medical student entitle one to enter upon the University course. In each of these Universities a specified part of the five-years' curriculum (as a rule, two years) must be spent in attending the classes of the University which grants the degree, the rest being spent in some other approved school or schools.

**LONDON UNIVERSITY.**—Here there are now two classes of students, external and internal, the latter being students of affiliated colleges. Both are the same in respect to the fact that all must pass the Matriculation examination of the University, or have an equivalent for exemption. Such equivalents are the degrees of certain approved universities, the Scotch School-leaving certificate in honours (all the subjects being passed on one and the same occasion), the Oxford Senior Local on certain conditions, and a few foreign certificates. Students are then required to be engaged in their professional studies during five years subsequent to Matriculation, and four years subsequent to their passing the Preliminary Scientific examination, Part I., at one or more of the medical institutions or schools recognised by the University for the purpose; one year, at least, of the four to be spent in one or more of the recognised institutions or schools in the United Kingdom. This practically enables medical students of any country to get the University degree.

The examples given show the variations that are permissible in the course of study, it being understood that the Royal University of Ireland has similar regulations to those of the London University, while the Dublin University conditions were the same as at Oxford.

### Medical Diplomas

are granted by the Royal Colleges and the Societies of Apothecaries, the Conjoint examination of the Royal College of Physicians and the Royal College of Surgeons being known as the "double qual." This and the L.S.A. are what are usually taken by London students. The equivalent qualification in Scotland is the "triple qual.," and Irish students have a similar choice of qualification. Some of the Universities (*e.g.*, Durham) also grant licences which are not degrees. As to the advantages of a degree over a diploma, it is held by those best fitted to express an opinion that the possession of a degree contributes materially to a successful medical career. It moreover entitles the holder to the courtesy title "Dr."

### The Medical Curriculum.

The General Medical Council has laid down the following requirements of the medical curriculum. The course

of study, to occupy five years, must contain the following subjects:

(i.) Physics, including the elementary mechanics of solids and fluids, and the rudiments of heat, light, and electricity; (ii.) chemistry, including the principles of the science, and the details which bear on the study of medicine; (iii.) Elementary biology; (iv.) Anatomy; (v.) Physiology; (vi.) Materia Medica and Pharmacology; (vii.) Pathology; (viii.) Therapeutics; (ix.) Medicine, including medical anatomy and clinical medicine; (x.) Surgery, including surgical anatomy and clinical surgery; (xi.) Midwifery, including diseases peculiar to women and to new-born children; (xii.) Theory and practice of Vaccination; (xiii.) Forensic medicine; (xiv.) Hygiene; (xv.) Mental Disease.

The manner in which the subjects are arranged and combined varies a little in the different medical schools. Winter and summer sessions are arranged in such a manner that the student is kept busy and examinations are taken at the end of each year. Failure to pass any of the examination throws the student back for from three to six months, and in working out the cost of medical training the possibility of thus lengthening the course should be taken into account.

### MEDICAL QUALIFICATIONS.

There are in the United Kingdom some twenty distinct "portals" for entering the medical profession. Five of these are the corporate bodies which grant diplomas, the remainder being universities which grant medical degrees.

#### MEDICAL DIPLOMAS.

**Royal English Colleges.**—The familiar title L.R.C.P.L. and M.R.C.S.E. is granted to men only by the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England. Candidates must pass a preliminary examination recognised by the Board (substantially those of the G.M.C.) and during the five years' professional curriculum pass three examinations. The first is in physics and chemistry, practical pharmacy (which may be taken at a later stage), and elementary biology. It may be taken in separate parts. The studies in these subjects must be pursued in an approved but not necessarily a medical school. The certificates of certain other institutions are recognised. Pharmacy may be studied under any medical practitioner or member of the Pharmaceutical Society, or in a public hospital, infirmary, or dispensary. The four and a half years after the first six months of the prescribed period must be spent in a medical school. The second examination is in anatomy and physiology, which must be taken together. The third examination is in the branches of medicine, surgery, and midwifery, and may be passed in three parts. Total fees, 42*l.* Address: The Secretary, Examination Hall, Victoria Embankment, London, W.C.

**The Apothecaries' Licence**, commonly called L.S.A., is granted by the Society of Apothecaries, and entitles to registration as a medical practitioner. By a resolution of the Court of Assistants of October 8, 1900, it was decided that the only titles which the Society can authorise as a proper description of the L.S.A. 1886 are those of Physician and Surgeon, either added to the title of L.S.A. 1886, or used alone. Candidates must be registered medical students and pass two Professional examinations, each of which can be taken in parts. Fees, 21*l.* Address: Mr. F. Haydon, Secretary, Court of Examiners, Apothecaries' Hall, Blackfriars, E.C.

**Royal Scotch Colleges.**—The Scotch triple qual., L.R.C.P.&S.Edn. and L.F.P.S.G., is conferred by the Conjoint Board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow. Candidates are required to pass the Educational Institute's Preliminary examination or otherwise to be registered as medical students, and to pass four Professional examinations—viz., *First*, in physics, chemistry, and elementary biology at the end of the first year. Fee, 5*l.* *Second*, in anatomy and physiology. Fee, 5*l.* *Third*, in pathology and materia medica. Fee, 5*l.* *Final*, at the termination of the full period of study, in the rest of the subjects. Fee, 15*l.* The examinations are open to women. Addresses: Mr. James Robertson, Solicitor, 54 George Square, Edinburgh, and Mr. Alexander Duncan, B.A., LL.D., Faculty Hall, 242 St. Vincent Street, Glasgow.

**Royal Irish Colleges.**—The L.R.C.P.I. and L.R.C.S.I. is conferred by the Conjoint Board of the Royal Colleges of Physicians and Surgeons in Ireland. The Board holds a Preliminary examination in the subjects prescribed by the G.M.C. in March, September, and November yearly. Fee, 2*l.* 2*s.* The Board also recognises the examinations on the G.M.C. list. There are four Professional examinations—viz., at the ends of the first and second winter sessions and third and fifth years of study. From a convenient table given in the official guide we note that the total expense of obtaining the triple qualification is placed at 160*l.* 13*s.* (this



is exclusive of the student's board and lodging). The examinations are open to women. Secretary, Mr. Alfred Millor, Office of the Royal College of Physicians, Dublin.

*Irish Apothecaries' Licence*, or L.A.H., is granted by the Court of the Apothecaries' Hall of Ireland. Candidates must be registered as medical students for fifty-seven months, must present certificates of having fully completed the course of study as laid down in the curriculum, and must pass four Professional examinations. Fees, 22*l.* 1*s.* Address: The Registrar, Apothecaries' Hall, 40 Mary Street, Dublin.

#### MEDICAL DEGREES.

The first point to note is that all Universities require students proceeding to their medical degrees to pass the Preliminary examination peculiar to each University or (in some cases) its equivalent, and to pursue professional studies therein during a part at least of the curriculum. The London University and the Royal University of Ireland are exceptions on the latter point. The degrees granted and sufficing for registration as a medical practitioner are—bachelor of medicine and bachelor (or master) of surgery, which carry with them the courtesy title of doctor. In the subjoined notes we refer solely to the bachelorates.

*Aberdeen*.—The regulations in this and the other three Universities in Scotland are identical and are given under *Edinburgh*. The Dean of the Faculty of Medicine is Professor R. W. Reid, M.D.

*Birmingham*.—For the M.B., Ch.B. degree the matriculation examination of the University in G.M.C. subjects must be passed, or its equivalent (*e.g.*, that of any other University, or College of Preceptors' first class). The examination will be held on September 24, 1906, July 15 and September 23, 1907. Fee, 2*l.* Four of the five years' curriculum must be spent in the University, but the Senate have power to recognise attendance at another University, and to recognise such University examinations in chemistry, physics, and elementary biology. Composition fee for the five years' curriculum, 85*l.*, payable in four annual instalments—*viz.*, 25*l.*, 25*l.*, 15*l.*, and 20*l.* Five Professional examinations. Fees, 16*l.* Dean, Professor Barling.

*Cambridge*.—The student must matriculate at and reside in the University nine terms, also pass (or obtain exemption from) the Previous examination, and three Professional examinations, and keep an Act—*i.e.*, read a thesis composed by himself, upon which he may be examined. The arrangements enable Cambridge medical students to take the greater part of the curriculum in London. The Cambridge University Press publishes a "Students' Handbook," which is a useful compendium of information. There are four Professional examinations. Fees, 25*l.*

*Dublin*.—Students must be B.A.s of this University or of Oxford or Cambridge, and spend five years in professional studies.

*Durham*.—Students must pass the Registration examination in English, English history, geography, Latin, arithmetic, algebra, Euclid, and Greek, or French, or German. The examination is held in September and March yearly. Eight other examinations are recognised in lieu of this. Fee, 1*l.* 10*s.* Secretary, the Rev. H. Ellershaw, North Bailey, Durham. Of the five years' curriculum one year must be spent at the Durham College of Medicine, Newcastle-on-Tyne, and the others in approved institutions.

*Edinburgh*.—A Preliminary examination is required to be passed before entering, the subjects being (1) English, (2) Latin, (3) elementary mathematics, (4) Greek, or French, or German. In the case of a candidate whose native language is not English, an examination in his own native language may be substituted for French or German, and an examination in any other classical language for one in Latin or Greek. Examinations are held in March and September. Fee, 10*s.* 6*d.*, payable to Mr. James Dowie, the University, Edinburgh. Certain examinations are accepted in lieu of this examination. Of the five years' curriculum two years must be spent at the University, and the remaining three may be spent at some other recognised school. Of the sixteen professional subjects at least eight must be taken at the University, or in some recognised University. There are four Professional examinations. Total fees, 23*l.* 2*s.* Dean, Professor D. J. Cunningham, the University, Edinburgh. The above information also applies to the Universities of Aberdeen, Glasgow, and St. Andrews so far as the course of study is concerned.

*Glasgow*.—Conditions as in Edinburgh University (*q.v.*). Inquiries and correspondence should be addressed to Mr. W. Innes Anderson, Matriculation Office, the University, Glasgow, and in the case of women students to Miss Galloway, Queen Margaret College, Glasgow. Dean of the

Faculty of Medicine, Professor Murdoch Cameron, the University, Glasgow.

*Leeds*.—The degrees M.B. and Ch.B., M.D. and Ch.M. are granted. Inquiries should be addressed to the Dean, Professor A. S. Grünbaum, M.D., the University, Leeds.

*Liverpool*.—A special matriculation pamphlet is obtainable from the Registrar, University of Liverpool. This examination or its equivalent has to be passed, and otherwise the conditions for graduation are the same as the Victoria University. Dean, Professor B. Moore, the University, Liverpool.

*London*.—Candidates for the M.B. and B.S. must pass the Matriculation examination or be exempted as graduates of Universities approved by the Senate. Women who have obtained the Cambridge Tripos certificate, or that of the Oxford Second Public examination or honours in the Oxford University Examination for Women in modern languages, are also exempt. The higher or honours grade of the Scotch School-leaving certificate also gives exemption from the Matriculation examination. The University, in common with the Royal Colleges of Physicians and Surgeons, does not require its matriculated medical students to register as such at the General Medical Council. There are two classes of students, *internal* and *external*, the former comprising those who have matriculated and attended any one "approved course of instruction" in a school or under any one recognised teacher of the University. There are three Professional examinations in the normal course of study. The first of these is the "Preliminary Scientific, Part I.," which cannot be taken until one academic year after matriculation. The subjects are inorganic chemistry, physics, and biology. Part II. of this examination, comprising organic chemistry, is taken not less than six months afterwards. The "Intermediate," the subjects of which are anatomy, physiology, and pharmacology, follows a year after Part II. of the Preliminary Scientific; the last examination being the "Final," in medicine, surgery, midwifery, and diseases of women, forensic medicine, and hygiene, which is taken two academic years after the Intermediate. Booklets are issued giving very full particulars of the curricula and examination schemes. Communications should be addressed to the Academic Registrar, University of London, South Kensington, S.W., or in the case of external students, the External Registrar.

*University of Manchester*.—The Matriculation examination or its equivalent has to be passed. It is held in July and September each year by the Joint Matriculation Board (representing Leeds, Liverpool, and Manchester) in the following subjects: (1) English language or literature, and English history; (2) mathematics; (3) three of the following, one of which must be a language: Greek, Latin, French, German, some other modern language approved by the Board, elementary mechanics, chemistry, geography, or natural history. Fee, 2*l.*, payable to the Secretary, the Joint Matriculation Board, Owens College, Manchester. Arts graduates are exempt from the examination, also any who have matriculated at the London University and those who have the Higher Local Oxford and Cambridge certificates and the Senior Locals in honours. At least two years of the five years' curriculum must be passed in the University. There are three Professional examinations, the arrangements being similar to those for the London University degrees. Fees, 19*l.* 18*s.* Dean, Professor W. Stirling, The University, Manchester.

*Oxford*.—The degrees B.M. and B.Ch. are granted only to those who have taken the B.A. degree. There are a Preliminary and two Professional examinations, and a certain portion of the curriculum must be taken at the Oxford Medical School. Particulars of fees are given in the "Student's Handbook" published by the Clarendon Press at 2*s.* 6*d.*

*Royal University of Ireland*.—Candidates must pass the Matriculation and First University examinations. The examinations are held in the summer and autumn at various centres. Fee, 1*l.* The subjects are Latin, English, mathematics, natural philosophy, and a modern or classic language. The "First" examination is in the same subjects, but cannot be taken until a year after the Matriculation. Fee, 1*l.* Four Professional examinations have also to be passed. Fee, 1*l.*, except for the M.B., etc., examination, which is 2*l.* The University recognises most of the medical and science schools in the United Kingdom for the requisite instruction. Address, The Secretaries, R.U.I., Dublin.

*St. Andrews*.—Conditions the same as in Edinburgh University (*q.v.*). The Dean of the Faculty of Medicine is Mr. E. Waymouth Reid, F.R.S., University College, Dundee.

#### Medical Schools.

We give below a list with a few particulars, of the schools and colleges recognised by the authorities as proper places of tuition for medical students, which are affiliated with the



University of London. Further details may be obtained from the deans or secretaries :

## LONDON.

**Charing Cross Hospital**, The Medical School, Chandos Street, W.C.—Fees for general students, 115 guineas in one sum, or by the sessional-payment system entrance-fee ten guineas and fifteen guineas at the beginning of every winter session and ten guineas each summer session. Dean, Dr. Christopher Addison.

**Guy's Hospital**, London Bridge, S.E.—Fees about 160l. Has a residential college, in which rooms cost from 11s. to 18s. per week. Dean, Dr. H. L. Eason.

**King's College**, Strand, W.C.—Fees for the University of London courses: Preliminary Scientific, Part I., 26l. 5s.; Inter.M.B. and Pre.Sc., Part II., 57l. 15s. The Conjoint Board Course fees are 5l. 5s. less. Dean of the Faculty of Science (Medical Division), Professor W. D. Halliburton, M.D., F.R.S.

**King's College Hospital**, Portugal Street, W.C.—Fees for the University of London or Conjoint Board Courses: Advanced students, 73l. 10s.; composition-fees: University full course 147l., Conjoint Board full course 141l. 15s.

**London Hospital**, Mile End, E.—Fees, 126l., or 136l. 10s. in instalments (sons of medical men 15l. 15s. less). Contains 929 beds, and is the largest accident hospital in the world. A new block has been added for better accommodation and more adequate teaching in the various departments. Warden, Mr. Munro Scott, Turner Street, Mile End, E.

**London (Royal Free Hospital) School of Medicine for Women**, 8 Hunter Street, Brunswick Square, W.C.—Fees Intermediate and Final M.B. Lond. course, including hospital practice, 135l., or 145l. in four instalments. Dean, Miss Cock, M.D.

**Middlesex Hospital**, Cleveland Street, W.—Fees, about 150l. Dean, Mr. J. Murray, F.R.C.S. Residential college, 2l. 2s. to 2l. 10s. per week, inclusive of board.

**St. Bartholomew's Hospital**, West Smithfield, E.C.—Fees, 31l. 10s. entrance and 31l. 10s. annually for five years or a single payment of 173l. 5s. Has a residence for students. One entrance scholarship of 150l., two of 75l., and one of 50l. are offered in science, and there is an exhibition worth 20l. in general education; the total value of scholarships and prizes awarded annually is about 900l. Dean, Dr. T. W. Shore.

**St. George's Hospital**, Hyde Park Corner, S.W.—Fees: Prel. Science 21l., entrance-fee 21l., annual composition-fee 31l. 10s.; clinical students, entrance-fee, 10l. 10s. There are several entrance scholarships at this hospital. Dean, Mr. F. Jeffrey, F.R.C.S.; Warden, Dr. R. S. Trevor.

**St. Mary's Hospital**, Cambridge Place, Paddington, W.—Fees for full curriculum, 140l., or 145l. in instalments. Entrance scholarship examinations will be held on September 24 to 26. Dean, Dr. H. A. Calcy.

**St. Thomas's Hospital**, Albert Embankment, S.E.—Fees consisting of entrance and composition fees, amount to about 140l. Prospectus can be obtained from the Medical Secretary, Mr. G. Q. Roberts.

**University College**, Gower Street, London, W.C.—Faculty of Medical Sciences. Composition-fees required by the University of London courses (Preliminary Scientific and Inter. Med. courses), 80 guineas; for the Examining Board in England and Society of Apothecaries (First examination, Parts I., II., III., and IV., and Second examination), 75 guineas. Dean, Professor Risdon Russell, M.D.

**University College Hospital Medical School**, Gower Street, London, W.C.—Composition-fees required by the University of London courses (Final M.B., B.S. course), 80 guineas; for the Examining Board in England and Society of Apothecaries (Third examination), 80 guineas. For Dental Students (L.D.S. course), 65 guineas. Dean, Professor Sidney Martin, M.D., F.R.C.P., F.R.S.

**Westminster Hospital**, Caxton Street, S.W.—Fees, Course for examinations of Conjoint Examining Board, 120 guineas, or 144 guineas in six instalments. Dean of the School, Mr. E. Percy Paton, M.D., M.S., F.R.C.S.

## PROVINCIAL.

**Aberystwyth and Bangor** (constituent colleges of the University of Wales) as far as the First Professional examination is concerned. The Registrar of the Aberystwyth University is Mr. J. Mortimer Green; for Bangor address the Dean of the University.

**Birmingham**—*University Faculty of Medicine*.—Fees (complete for obtaining the degrees of M.B. and Ch.B.), 154l. 19s. 6d. Dean, Professor Gilbert Barling, M.Sc., F.R.C.S.

**Bristol**—*University College*.—Students can complete in Bristol the entire course of study required for the Medical

and Surgical Degrees of the University of London. Fees, 73l. 10s., or 57l. 15s. (in one sum), and hospital 12l. 12s. (annual) and 21l. (perpetual). Dean, Professor E. Markham Skerrett, M.D. Registrar and Secretary, James Rafter.

**Cambridge**—*University Medical School*.—Apply to the Registrar, of the University, Cambridge.

**Cardiff**—*University College*.—Instruction is given for the Preliminary scientific and Intermediate M.B. examinations, Lond., and for the corresponding examinations of other universities. Fees, 57l. 10s., or for Conjoint Board, 41l. 10s. For particulars apply to the Registrar or Dean.

**Leeds**—*University Faculty of Medicine*.—Composition-fees for classes for M.B., Ch.B., and diplomas, 71l. 0s. 6d. Dean, Professor A. S. Grünbaum, M.D.

**Manchester**—*Victoria University*.—Fees for M.B. 128l. 5s. exclusive of special courses. Dean, Professor William Stirling, M.D.

**Newcastle-on-Tyne**—*Durham College of Medicine*.—Fees, 101l. 17s., with some extras. Secretary, Professor Robert Howden, M.A.

**Oxford** has an excellent school of medicine, particulars of which can be had from the "Student's Handbook," referred to on p. 306.

**Sheffield**—*University (Faculty of Medicine)*.—Fees about 110l. Dean, Dr. W. T. Cocking.

## SCOTLAND.

**Aberdeen**—*University Faculty of Medicine*.—Fees about 100l. Secretary, Mr. Donaldson R. Thom, M.A.

**Dundee**—*University College*.—Classes and hospital practice for the degree of M.B. and degree in Public Health. The college is affiliated to St. Andrews University. Secretary, Mr. R. N. Kerr.

**Edinburgh**—*University Faculty of Medicine*.—Minimum class and hospital fees, 115l. Dean, Professor D. J. Cunningham.

*School of Medicine of the Royal Colleges*.—The minimum cost of the education at this school for the triple qualification, including examination-fees, is 115l. Secretary, Mr. R. N. Ramsay, solicitor, 27 Forrest Road, Edinburgh.

A post-graduate vacation course in medicine has been arranged in connection with the University and Royal Colleges. The course begins on September 17. Particulars can be obtained from the Secretary, The Faculty Office, University New Buildings.

**Glasgow**—*University Faculty of Medicine*.—Fees for M.B. and Ch.B., including Matriculation, class-fees, hospital attendance and Professional examinations, about 150l. Dean, Professor Murdoch Cameron, M.D.

*Anderson's College Medical School*, Dumbarton Road.—Fees for Scottish triple, about 70l. Communications to Dr. Robert Barclay Ness, 19 Woodside Place, Glasgow.

*Queen Margaret College*, Hamilton Drive, Glasgow (Glasgow University School of Medicine for Women).—Fees for M.B. and Ch.B., including Matriculation, class-fees, hospital attendance, and Professional examinations, about 150l. Hon. Secretary, Miss Galloway.

*St. Mungo's College*, the Medical School of the Royal Infirmary, Glasgow, 86 Castle Street.—Fees for English and Scottish Conjoint qualifications, about 65l. The Dean, Professor A. Macphail, will supply a detailed syllabus.

**St. Andrews University**—*Faculty of Medicine*.—The subjects for the whole of the curriculum are taught. (See also Dundee.) Fees, 4l. 4s. for the theoretical and 3l. 3s. for the practical classes in subjects for graduation per subject. Secretary and Registrar, Mr. Andrew Bennett.

## IRELAND.

**Belfast, Queen's College**.—Fees, about 95l. Registrar, Dr. Johnson Symington, F.R.S.

**Cork**—*Queen's College*.—Fees (for M.B., R.U.I.), about 85l. Registrar, Mr. Alexander Jack, M.A.

**Dublin**—*Catholic University Medical School*, Cecilia Street, Dame Street.—Minimum cost of lectures, hospitals, special courses, and examination may be put as follows: Royal University, 160l.; Conjoint Colleges, 160l.; Apothecaries' Hall, 141l. Registrar, Dr. A. Birmingham.

*School of Physic in Ireland* (Trinity College).—Fees, 149l. 17s. Registrar, H. W. Mackintosh, M.A., Trinity College.

*Royal College of Surgeons in Ireland*.—Schools of surgery, including Carmichael and Ledwich Schools. All the lectures and courses of practical instruction may be attended by medical students who are otherwise unconnected with the college. Address, the Registrar, St. Stephen's Green, Dublin.

**Galway**—*Queen's College*.—Fees, as at Cork. Registrar, Professor Townshend.



## The Practice of Dentistry.

THE dental profession is a remarkable example of the inability of law and its administrators in this country to regulate a calling in accordance with public requirements. Since the Dentists Act was passed in 1878 the number of persons registered under it has decreased, and at the present time the number of persons practising dentistry for gain and not registered under the Act is greater than the number of registered dentists. Moreover, the conditions of qualification and registration are such that there is little hope of the registered practitioners increasing in number, while the unregistered practitioners are increasing. Without discussing the reasons for this condition in detail, it may be stated, broadly, that in this country there is an enormous demand for dental aid; we are a bad-teethed nation, and the working classes especially need the dentist's attention, which in the present stage implies extraction and fitting-in of artificial teeth. The majority have neither the time nor means to devote to the proper preservation of their teeth, which is the most valuable part of the profession of the college-bred dentist. Another reason for growth in the numbers of unregistered dentists is that all the Act conserves to those who are registered is their title and the right to sue for fees for professional services, while it does not prevent an unregistered person suing for materials and mechanical work done, nor prevent anybody performing any dental operations for hire so long as he does not hold himself out to be registered under the Act. A third reason for the growth of the unregistered element is the fact that the qualifications have been increased in stringency so as to be essentially professional, while the pupillage condition still obtains in which the pupils' time is devoted to mechanical or workshop duties—a condition which frequently unfits persons for collegiate training, and in more cases creates a degree of proficiency that induces the idea of getting along without the legal qualification. Through one or other of these circumstances the practice of dentistry in this country is at present in a parlous condition ethically, but one of the best money-making occupations going.

We assume that those whom we address desire to qualify as the law requires. Here, as in medicine, the controlling and registering authority is the General Medical Council, which accepts for registration the diplomas or degrees granted on examination by several colleges and universities. The conditions which students must fulfil are as follows:

1. Pass a Preliminary examination similar to that required of medical students (see p. 265) and register as a dental student.
2. From the date of registration as a student the individual must be engaged during four years in professional studies, including three years' instruction in mechanical dentistry from a registered practitioner or in some dental hospital.
3. During his curriculum the student must attend courses similar to those of medical students in chemistry, anatomy, physiology, surgery, medicine, and clinical work; and, as special dental subjects, dental anatomy and histology, dental surgery, and pathology, dental mechanics, and attend for two years at a dental hospital, operating and working according to the regulations.

### REGISTRABLE QUALIFICATIONS.

Of the choice afforded to students, we cannot say that one qualification is better than another; all are equal in the sight of the law, but many who hold the diploma of the Royal College of Surgeons, England, consider it to be the best, and here it may be said that some of the best English diplomates take advantage of the college provision of going forward at the same time for the medical diploma—M.R.C.S. and L.R.C.P. On the other hand, some canny Scots, knowing that a medical practitioner may practise as a dentist and call himself a dentist, do not bother about a dental diploma, but take a medical degree and supplement it with a course of instruction at a dental college. In the subjoined we indicate somewhat fully the course of instruction and the examinations of the Royal College of Surgeons, England, as it is typical of the rest:

**ROYAL COLLEGE OF SURGEONS.**—The diploma is for Licentiate of Dental Surgery (usually written L.D.S.Eng.). First the

*Preliminary Science Examination* in chemistry and physics must be passed. The instruction must have been obtained at a recognised institution, and be not less than 180 hours' instruction and laboratory-work in chemistry and 120 hours' instruction and laboratory-work in physics. This may be taken prior to registration, but the examination can only be passed after registration as a dental student. Fee, 3*l.* 3*s.*

*The First Professional Examination* is in mechanical dentistry and dental metallurgy, and is taken after the two years' mechanical work and a six-months' course at a recognised dental school. The training in mechanical dentistry may have been taken before registration as a dental student, but if so the student has four more years to reckon with (see next paragraph). Fee, 2*l.* 2*s.*

*The Second Professional Examination* comes at the end of the curriculum four years subsequent to the date of registration as a student, and the student must be twenty-one years of age. It is written, practical, and oral. The written examination comprises general anatomy, physiology, pathology, and surgery, dental anatomy and physiology, dental pathology, and dental surgery. The oral comprises the same subjects, and is conducted by the use of preparations, casts, drawings, etc. In the practical portion students are examined in dental caries, and may be required to fill cavities, etc.; their knowledge is also tested with regard to the irregularities of children's teeth. Part I. must be passed before Part II. Fee, Part I., 2*l.* 2*s.*; Part II., 3*l.* 3*s.* A further 10*l.* 10*s.* is paid for the diploma.

Students are advised to write to Mr. F. G. Hallett, Examination Hall, Victoria Embankment, London, W.C., for the printed particulars respecting the diploma before they decide upon their course of study.

**UNIVERSITY OF BIRMINGHAM** grants the degrees of Bachelor and Master of Dental Surgery and L.D.S. Candidates for the degrees must pass the Matriculation examination required from medical students; they must have a licence in dental surgery (*i.e.*, that of this University), which must have been obtained at least twelve months previous to taking the degree, six months of this time being spent in the dental department of a hospital approved by the University. The candidate must attend the following courses as required of medical students at the University, and pass the examinations held in the same for medical and surgical degrees: Chemistry, practical chemistry, physics, elementary biology, anatomy, physiology. The candidate must also attend courses of lectures on medicine, surgery, surgery and medicine of the mouth, pathology and bacteriology, dental histology and comparative anatomy, and dental surgery and prosthetic dentistry. The M.D.S. degree can be taken by thesis twelve months later. Fees for L.D.S. and B.D.S., 14*6*l.** 19*s.*, exclusive of books and instruments.

**UNIVERSITY OF LEEDS.**—The diploma in dental surgery (L.D.S.) is granted substantially on the General Medical Council's conditions. The courses of instruction must be approved by the University, the examinations being in number and nature similar to that of the Royal College (above), but two years of the three years' pupillage must be completed before entering for the first professional examination. Degrees of Bachelor of Dental Surgery (B.Ch.D.) and Master of Dental Surgery (M.Ch.D.) are also granted. For the former candidates must pass the Matriculation examination of the University, and thereafter pursue approved courses of study for not less than five academic years (two of them in the University subsequently to the date of passing Parts I. and II. of the First examination) and complete the pupillage or hospital attendance, or both, as prescribed by the University. No candidate is admitted to the degree who has not attained twenty-one years of age on the graduation day. There are three professional examinations, the G.M.C. subjects being included.

**LIVERPOOL UNIVERSITY** grants the degrees of Bachelor of Dental Surgery and Master of Dental Surgery. Candidates must be of age, have been registered as dental students, and have been engaged, subsequent to registration, in professional study for at least five years. An approved Matriculation must have been passed, and thereafter for the B.D.S. four examinations. The degree of M.D.S. is taken by those who have passed the B.D.S. examinations, the one examination comprising general pathology and bacteriology and dental surgery in a more advanced form than is required for the B.D.S. Examinations are also held for the L.D.S. diploma.

**UNIVERSITY OF MANCHESTER.**—Here are granted a diploma of Licentiate in Dental Surgery (L.D.S.Manc.), a degree of Bachelor of Dental Surgery (B.D.S.), and a degree of Master in Dental Surgery (M.D.S.). All candidates for the diploma are required to pursue four courses of study after registration as dental student, and to satisfy the examiners in the four corresponding examinations. For B.D.S. candi-



dates must pass the University Matriculation examination, be engaged in professional studies for five years, and pass four examinations. Any L.D.S. who has studied at Owens College or the University and at a recognised dental hospital may be allowed to obtain the degree after passing the Third and Final examination. M.D.S. may be obtained one year after the B.D.S., either (a) on presentation of a dentistry dissertation or (b) on examination. For further particulars see the syllabus of the University Dental Department.

The foregoing are the various English qualifications in dentistry. We subjoin those obtainable in Ireland and Scotland:

**ROYAL COLLEGE OF SURGEONS IN IRELAND.**—The licence in dental surgery (L.D.S.Irel.) is granted to candidates who pass two professional examinations in the subjects and under the conditions prescribed by the General Medical Council, fees 21l. Full particulars to be obtained from the Registrar, Royal College of Surgeons, Stephen's Green, Dublin.

**THE UNIVERSITY OF DUBLIN** grants both a degree (M.Dent.Sc.) and a licence (L.Dent.Sc.) in dental surgery. For the licence the conditions are similar to those obtaining elsewhere, the Public Entrance examination of Trinity College being the first step recommended. For the degree it is necessary that candidates should be B.A. of Dublin, and have their names on the medical or dental school for five years, and pass the previous dental examinations in

- (1) Anatomy, physiology, and histology.
- (2) Physics, chemistry, and metallurgy.
- (3) Materia medica.

Also the Final examination for the degree in

Medicine.	Dental Anatomy, Human and
Surgery.	Comparative.
Pathology.	Dental Surgery and Pathology.
Bacteriology.	Dental Mechanics.
Dental Microscopy.	Orthodontia.

The subjects printed in italics are not given in the Licence Final, the rest are, and this, with the conditions of entry, constitutes the difference.

**ROYAL COLLEGE OF SURGEONS, EDINBURGH.**—For L.D.S.Edin. two examinations are taken during the collegiate curriculum—viz., *First*, in anatomy, chemistry, physics, and physiology; *Second*, dental surgery, medicine, and therapeutics. Fees, 15l. 15s. Address: Mr. James Robertson, 54 George Square, Edinburgh.

**FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.**—The examinations and fees for L.D.S.Glasg. are much the same as in Edinburgh. Address: Mr. A. Duncan, B.A., LL.D., 242 St. Vincent Street, Glasgow.

#### COST OF QUALIFICATION.

A young man who desires to become a dentist in the regular manner should, before he is apprenticed, pass an examination in elementary knowledge recognised by the General Medical Council—in England, say the College of Preceptors' professional examination or the London Matric.; in Ireland, the Royal College of Surgeons' examination; and in Scotland, the Educational Institute's. The next step is to be articled to a registered dentist for a period of three years and immediately register as a dental student. Some of the colleges go out of their way to emphasise the fact that for their licence examinations the three years' pupilage may be taken *prior* to registration as a dental student. This seems almost wicked, for these reasons:

1. It encourages pupils to delay passing an examination in school subjects until after their apprenticeship—then many of them cannot.
2. It encourages delay in registration as a dental student, when it is desirable that every day he is learning the elements of his profession should be credited to him by the G.M.C. Registrar.
3. He cannot enter for the Final examination until four years after he has registered as a dental student. As two of the three years' pupilage count as two of the four years' curriculum, if he does not register as a dental student until he enters College, say, at the end of his pupilage, he will not be able to get his diploma until seven years after he has been articled.

The General Medical Council is frequently asked to ante-date dental students' registration, generally because they have ignored the malicious significance of the notion that mechanical work may be taken before registration.

If the pupil is in a town where there is a dental college, he may be able after two years or simultaneously (according to his age) attend the courses of instruction. Those requisite

for Manchester L.D.S. are a fair example of what can be done in four years:

#### FIRST YEAR.

*Winter and Summer.*—Chemistry (lectures and practical); physics and elementary mechanics; laboratory-work in dental mechanics.

#### SECOND YEAR.

*Winter.*—Dental mechanics; dental metallurgy; laboratory-work in dental mechanics.

*Summer.*—Laboratory-work in dental mechanics.

#### THIRD YEAR.

*Winter.*—Anatomy (lectures and practical); physiology (lectures); laboratory-work in dental mechanics; dental hospital practice; clinical surgery at a general hospital.

*Summer.*—Dental histology; dental anatomy and physiology; anatomy (practical); practical histology; general pathology and practical pathology; laboratory-work in dental mechanics; dental hospital practice.

#### FOURTH YEAR.

*Winter.*—Surgery lectures (including elements of surgical pathology); clinical surgery at a general hospital; dental hospital practice; anatomy (practical).

*Summer.*—Dental pathology and surgery; operative dentistry; dental hospital practice.

The cost of the pupilage and instruction may be reckoned to be on the average as follows:

Pupilage premium ... ..	£100
College and hospital fees ... ..	100
Instruments, books, and subjects ... ..	40
Examination-fees ... ..	21
	<hr/>
	£261

Besides, there are maintenance and many incidentals. We append a list of the

#### INSTITUTIONS FOR DENTAL INSTRUCTION.

Students should communicate with the Dean or secretary of the institution which they select for particulars of the arrangements.

##### London.

**CHARING CROSS HOSPITAL DENTAL DEPARTMENT**, Chandos Street, London, W.C.—Fees for the two years' curriculum required by dental students are fifty-five guineas in one sum, or sixty-one guineas in two instalments. Dean, Dr. Christopher Addison.

**GUY'S HOSPITAL DENTAL DEPARTMENT AND SCHOOL**, London Bridge, S.E.—Fees for L.D.S.Eng., 110l. (or 115l. 10s. in two instalments). Dean, Dr. H. L. Eason.

**NATIONAL DENTAL HOSPITAL AND COLLEGE**, Great Portland Street, W.—Fees for complete curriculum, 40l.; for three years' mechanical training, 50l. per annum; "composition fee" (including three years' pupilage and two years' hospital practice and lectures), 160l., not including medical subjects. Dean, Mr. Sidney Spokes.

**ROYAL DENTAL HOSPITAL OF LONDON**, Leicester Square, W.C.—Fees for instruction in mechanical dentistry and the two years' hospital practice and lectures for L.D.S., 150l.; for the two years' hospital practice and lectures, 53l. 3s. Single courses may be taken. Further particulars can be obtained of the Dean.

**ST. THOMAS'S HOSPITAL DENTAL DEPARTMENT.**—The arrangements and fees are similar to those at Guy's and Westminster.

**WESTMINSTER HOSPITAL DENTAL DEPARTMENT.**—Fees: One payment of 52l. 10s., or two payments of 27l. 10s. each.

##### Provincial.

**BIRMINGHAM.**—University Dental Department and Dental Hospital.

**BRISTOL.**—Medical School, Royal Infirmary, and General Hospital.

**DUBLIN.**—School of Dentistry and Dental Hospital of Ireland, Lincoln Place.

**EDINBURGH.**—Dental Hospital and School, 31 Chambers Street. Dean, Mr. W. Guy, F.R.C.S., 11 Wemyss Place.

**EXETER.**—Dental Hospital. Hon. Secretary, Mr. Henry Yeo, 8 Bedford Circus, Exeter.

**GLASGOW.**—Dental Hospital and School, 5 St. Vincent Street.

**LEEDS.**—University School of Dentistry.

**LIVERPOOL.**—University Dental Department and Dental Hospital.

**MANCHESTER.**—University Dental Department and Victoria Dental Hospital.

**NEWCASTLE-ON-TYNE.**—Royal Infirmary and Dental Hospital.

**SHEFFIELD.**—The University Dental Department.



## Veterinary Surgery.

TO those pharmacists who hanker after a higher professional status the field of veterinary surgery is open. For the question of whether or not veterinarianism is a profession was settled in 1844 by a charter granted to the Royal College of Veterinary Surgeons (10 Red Lion Square, W.C.), which states that the "veterinary art as practised by the members . . . shall be henceforth deemed and taken to be and recognised as a profession." In 1881 the Veterinary Surgeons Act was passed, which placed with the College the power of granting veterinary diplomas, and protected the title. This Act, however, gives no monopoly of veterinary practice, and it has been decided by the High Court that a chemist may use the title "veterinary chemist." The veterinary surgeon has the advantage, if it may be looked upon as such, of knowing that, unlike pharmacy, his business is a profession. To be a successful veterinary surgeon, however, something more than mere professional aspirations are required. There must be a fondness for animals, a sound physical constitution, and a readiness to adapt oneself to the not too refined atmosphere of the stable and the cowbyre. But the work is interesting, healthy, and, to a skilful and painstaking man, as remunerative as anything else he could take up.

### REQUIREMENTS.

In order to become a veterinary surgeon it is necessary to note that the regulations of the Royal College of Veterinary Surgeons, which has now been recognised by London University, requires a candidate to pass (1) the Preliminary examinations recognised by the General Medical Council, or (2) the Preliminary medical examination of the Educational Institute of Scotland (see p. 252). The candidate must next study at a recognised veterinary school for four years, during which time he must (3) pass four Professional examinations as follows:

**EXAMINATION A.**—Anatomy of domesticated animals; bones, ligaments, joints. Chemistry and elementary physics. Biology: elementary zoology and botany.

**EXAMINATION B.**—Anatomy of domesticated animals. Histology and physiology. Stable management and manipulation of domesticated animals. Principles of shoeing.

**EXAMINATION C.**—Morbidity anatomy, pathology, and bacteriology. Materia medica, pharmacy, therapeutics, and toxicology. Veterinary hygiene and dietetics.

**EXAMINATION D.**—Principles and practice of veterinary medicine and surgery. Clinical medicine, surgery, and obstetrics (horse and other domesticated animals). Meat-inspection.

The candidate must be twenty-one years of age when entering for D.

The examinations are conducted by a Board of Examiners, which visits Edinburgh, Glasgow, Dublin, Liverpool, and London towards the end of the College terms (May and December). A fee of 5*l.* for each examination has to be paid to the Royal College at a specified date before the examination, and after the fourth is passed 1*l.* is paid for registration.

Holders of the diploma M.R.C.V.S. who have been a certain time in practice may obtain by thesis and examination the title of F.R.C.V.S. Army veterinary appointments are open for competition: commencing salary is 250*l.* a year, with rank of lieutenant, increasing by advancement to 1,200*l.*—the salary of the director-general, who holds rank of major-general.

### VETERINARY COLLEGES.

The following are the institutions which instruct students for the examinations. It should be noted that the Royal College of Veterinary Surgeons is the examining and not a teaching body.

**ROYAL VETERINARY COLLEGE** (founded 1791; incorporated 1875), Great College Street, Camden Town, London, N.W.—Educational fee, 80*l.*, paid in four instalments, and 2*l.* 12*s.* 6*d.* library fees. There are also fees for occasional students as follows: Anatomy, 8*l.* 8*s.*; botany, 3*l.* 3*s.*; chemistry, 5*l.* 5*s.*; pathology, 5*l.* 5*s.*; physiology, 5*l.* 5*s.*; practical chemistry, 3*l.* 3*s.*; practical histology, 3*l.* 3*s.*; practical pathology, 5*l.* 5*s.*; surgery, 5*l.* 5*s.*; and veterinary medicine, 5*l.* 5*s.* Post-graduate courses in veterinary pathology and bacteriology are held twice a year—in January and February, and in October and November—and are open only to qualified veterinary surgeons and medical men. Principal and Dean, Professor John McFadyen, M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

**UNIVERSITY OF LIVERPOOL.**—*Veterinary Department.*—Transferred from New Veterinary College, Edinburgh. Fees for four years' lectures and all other instruction, 75*l.* 12*s.*, payable in four instalments of 18*l.* 18*s.* Principal, Professor W. Owen Williams. Materia medica is taught by Professor Carter, with Mr. Prosper H. Marsden, F.C.S., and Mr. H. Sumner, M.R.C.V.S., as demonstrators. Mr. Marsden is also Lecturer in Pharmacy, which is a separate subject.

**UNIVERSITY OF MANCHESTER.**—The Senate grant a diploma in Veterinary State Medicine, the course of instruction including lectures and practical work in veterinary hygiene, comparative pathology, practical bacteriology, practical chemistry, and practical instruction in the duties of veterinary inspectors. The laboratory course can be completed in six or nine months; three months longer are necessary, in either case to complete the study of outdoor duties. Fees: For practical bacteriology and microscopy and inspection of food, 5*l.* 5*s.*; practical chemistry, 5*l.* 5*s.*; veterinary hygiene (lectures), 2*l.* 2*s.* These courses are run in connection with the Public Health Laboratories, of which Professor Delépine is director.

**ROYAL (DICK) VETERINARY COLLEGE** (founded 1823), Clyde Street, Edinburgh.—Matriculation and class fees, 58*l.* 16*s.*, in four payments, with an extra fee of 5*l.* 5*s.* for students returning for a portion of the fourth year's class. The Carnegie Trust pays students' fees at this College if the conditions laid down by the Trustees are fulfilled. It should be noted, however, that the Educational Institute examination is not accepted by the Trustees. Principal, Professor J. R. U. Dewar, F.R.C.V.S.

**GLASGOW VETERINARY COLLEGE** (established and incorporated 1863), Buccleuch Street, Garnethill, Glasgow.—Fee, 60*l.*, or 63*l.* in instalments. The Carnegie Trust pays the fees of students who fulfil the conditions. Principal, Professor J. McCall, F.R.C.V.S. Secretary, Mr. Wales.

**ROYAL VETERINARY COLLEGE OF IRELAND**, Pembroke and Shelbourne Roads, Dublin.—Fees, 21*l.* a session, with 1*l.* 1*s.* entrance-fee. The new illustrated prospectus gives a capital idea of the arrangements at this the newest of the Veterinary Colleges. Principal, Professor A. E. Mettam, B.Sc., M.R.C.V.S.

The curriculum fees amount to 100*l.* at the least, and these do not include any adventitious aids, such as private-coaches' classes. In addition to the college-fee, a student will need for microscope, dissecting-instruments, and books, say, another 50*l.*; allowance should also be made for illness and for failure at one or more of the examinations, which will entail a prolongation of the time during which the student is not in a position to earn anything.

## Science as a Profession.

THERE are so many directions in which science may be pursued professionally that in this issue we are compelled to confine particulars to the facilities for education in the chemical branch. Even that cannot be defined with precision, for it frequently happens that a man who has attained eminence in a branch of the science has got there as much by accident as by design. We know that if a man begins to study medicine a well-defined and statutory course of training lies before him, and, given the ability, he becomes a registered medical practitioner with fairly

well-defined day-by-day work before him and a fair return for it. He may specialise in some branch of medicine or surgery, but this branch is problematical at the beginning of his career as a student. The professional pursuit of chemical science resembles medical specialising; the student and the young worker rarely know what the outcome of their careers will be. The certain things that count for success are personal ability, thorough education, some originality of thought, and alertness to seize an opportunity as it arises. A few cases in illustration may be cited.



We select men whose names are familiar, and we trust we do not take their names in vain by selecting them as examples of successful achievement.

The first Jacob Bell scholar, as elsewhere noted, was William Augustus Tilden. He, like the other competitors, was a chemist's assistant. After he became a Major man he stayed on at the Square as demonstrator and lecturer in chemistry, meanwhile continuing his studies in science and becoming B.Sc. and D.Sc. of London University. He "researched" in many subjects, and at one time was the leading authority in England on essential oils, a subject with money-making possibilities in it. Apparently the academic bent crystallised in him, for he left the Square to become lecturer in chemistry at Clifton College, from there went to Mason's College, Birmingham, as professor, and finally succeeded Professor Thorpe at the Royal College of Science, South Kensington.

From the same school we may take another example—Wyndham Rowland Dunstan. He left a public school to become a private pupil of Professor John Attfield at the School of Pharmacy, Bloomsbury Square; and there he stayed until he became an assistant professor and succeeded Dr. Redwood as professor of chemistry and physics and director of the research laboratory. He was also a lecturer on chemistry at Oxford and in St. Thomas's Hospital, but gave up his academic career to become director of the Imperial Institute research laboratories, and now his energies as the head of the Institute are devoted to fostering the scientific development of the empire's resources. Professor Dunstan is one of those rare examples of men who succeed without academic distinction as measured by examinations.

Ludwig Mond, one of the few chemist millionaires, came to this country shortly after taking his Ph.D. degree. He became an analyst or tester in an alkali-factory. That was his choice, apparently his life-work. He had an opportunity of exploiting Solvay's ammonia-soda patent in England, and he and his friend and business colleague, John T. Brunner, with a capital of 5,000*l.*, took it. When Dr. Mond commenced to work the process he was met with difficulties which had baffled other chemists for half a century. By sheer force of will, great scientific ability and engineering skill (not credited to him in his Ph.D. degree) he overcame the difficulties, and is to-day one of the world's wealthiest men and most honoured chemists.

Another worker in alkali is Charles Thomas Kingzett. He had the orthodox collegiate training in chemistry, and for some time was associated with Dr. B. H. Paul in his consulting and analytical practice. He wrote a book on alkali, which used to be sold at a premium. A line of investigation took him on to the study of essential oils, and the influence of their oxidation products upon putrefaction. From this was evolved the disinfectant, Sanitas, and the greater part of Mr. Kingzett's life has been devoted to the manufacture of Sanitas, a matter involving great technical skill, while its popularisation has required no less commercial ability.

These examples could be many times multiplied in order to show that seizing the opportunity is an important element for success, and it should be *made* rather than *waited* for. Behind it, however, there must be a well-trained mind. It is better to spend several years early in life learning from professors the fundamentals of the science and their proof by experiment, as well as research in some definite direction, than to start out on a career of money-making when the college diploma or the B.Sc. is obtained. These are evidence of some learning, but not of the holder's ability as a worker.

One word must be said as to prospects in professional chemistry. At present the market is flooded with young men, B.Sc.s, etc., who are willing to work for from 50*l.* to 150*l.* a year. It is estimated by those in chemical industry that at least 80 per cent. of "trained chemists" can never earn more than 150*l.* a year, and the work that they have to do for that is not worth more. Of the remaining 20 per cent. not more than a fourth reach 1,000*l.* a year as employés.

The academic field is also full, and here the remuneration is less, and the waiting longer. Here the only chance of making a fortune is to become a scientific expert, which usually happens when a man has attained great academic distinction and his name is identified with some particular branch of his science.

Analytical and consulting chemistry is the refuge for the majority of college-trained chemists, and many who are not. The Institute of Chemistry is well hedging this field

round, but it is controlled by no Act of Parliament, and it is, on the whole, one in which a living may be made. The most successful in this branch are men of business ability who would be successful in anything—they make trade for themselves. There are many ways of doing that, and no royal road. The way has to be hewed out by each man himself. He must be as keen as a draper, as assertive as an auctioneer, as judicious as a lawyer, and, above all, he must know his business and be able to give his clients value for their money.

#### GOVERNMENT SCIENCE EDUCATION.

Higher education in science is given in the Royal Colleges of Science in London and Dublin, which are wholly maintained by the Government, while grants are also made to various universities. The Royal College of Science, South Kensington, London, S.W., is possibly the best-equipped school in the country. It is here that Excise and Customs officers are trained for posts in the Government laboratories and elsewhere in the Services as chemists. These, with the King's scholars, occupy most of the places in the College, but a few private pupils are taken at fees calculated not to compete with other science schools. The courses of instruction are in chemistry, engineering, and natural science, and last three years, the diploma of Associate (A.R.C.S. or A.R.S.M.) being granted to the fit.

The Royal College of Science for Ireland is under the Department of Agriculture and Technical Instruction. The College is situated at St. Stephen's Green, Dublin, and has three faculties—viz., Agriculture, Applied Chemistry, and Engineering. A limited number of scholarships are offered for competition among young men in Ireland who desire to acquire a thorough knowledge of technical agriculture. Each scholarship includes free admission to the first year's course of instruction in the College, a maintenance allowance of one guinea per week while in attendance at the College, and one third-class railway fare to and from Dublin. Candidates, who should be between eighteen and thirty years of age, must make application on a form, which may be obtained from the Registrar, Royal College of Science, St. Stephen's Green East, Dublin. They must pass an examination in English, Latin or Irish, French or German, mathematics, practical agriculture, and ability to impart instruction. The course of instruction in applied chemistry extends over three years, and includes mathematics, physics, mineralogy and drawing. The fees for all Associate students are 15*l.* for the first year, and 20*l.* for the second and third years. Non-associate students are taken, for whom a separate schedule of fees has been arranged; in the chemical laboratory, for instance, the charge is from 2*l.* for a special course of a month to 12*l.* for the entire session.

#### SCIENCE AND ART CLASSES.

In this section mention must be made of the excellent system by which science and art classes are conducted all over the country, grants being made by the Government as the result of examination. The Board of Education, South Kensington, London, S.W., is the body charged with establishing, conducting, and inspecting schools and classes which earn grants for science and art education, and thus regulates the education of the country in a sense. Among the subjects taught at local science schools, and in which examinations are held yearly, are the following:

Agricultural science	Magnetism and electricity
Applied mechanics	Mathematics
Botany	Metallurgy
Building-construction	Mineralogy
Chemistry (inorganic and organic)	Naval architecture
General biology	Physiography
Geology	Rural economy
Geometry	Sound, light, and heat
Human physiology	Steam
Hygiene	Theoretical mechanics (solids and fluids)
Machine-construction	Zoology

To students who attend twenty-five lessons and pass an examination a certificate is awarded, book-prizes being added in the advanced stages, and bronze medals in the honours stages. Besides, the following scholarships, ten-



able in the Royal Colleges of Science, are awarded annually to the best students in each of certain groups:

**Royal Exhibitions** (awarded to those who also obtain a success in advanced practical mathematics, or in the second or some higher stage, or a pass in honours).—50*l.* a year, and free admission to lectures and laboratories and instruction during the three years necessary for completing the Associateship course in the Royal College of Science, London, or the Royal College of Science, Dublin. Seven open each year.

**National Scholarships**.—25*s.* a week for the session of about forty weeks each year, and free admission for three years necessary to either of the above colleges. Twenty-one open each year. If either a Royal exhibitioner or a National scholar is required to assist in teaching in the Royal College of Science, an extra 5*s.* a week is allowed.

**Free Studentships**.—Free admission for three years to the Royal College in London. Six open each year.

Certain railway fares are also paid. Local teachers will give students further information, but the particulars are detailed in the official Directory for conducting schools and classes in connection with the Board of Education, Part I., 2*d.*; Part II. (giving schedules of subjects), 4*d.*, which may be obtained from the official publishers.

### UNIVERSITY SCIENCE EDUCATION.

There is some difference in the value of the degrees granted by different universities, as the standard of proficiency varies considerably; but in the case of those like London, where the curriculum requirements are stringent and the examination standard really high, thorough education in the principles and practice of science is obtained by qualifying for a degree. London University is making some attempt to meet objections to the examination system by granting a bachelorship degree on results of research in lieu of part or the whole of the Final examination. Most of the London schools and colleges which are not constituent colleges of the university have staffs of teachers recognised by it, so that students can be registered and examined as internal students of the university, which gives them advantages in examination over external students. In the provinces polytechnics and municipal schools supply elementary science instruction, students in the higher branches being catered for by university colleges, as well as the universities.

#### LONDON DEGREES.

Degrees are conferred by the University of London in each of eight faculties, and science now falls within our purview. In the faculty of science the degrees of B.Sc. and D.Sc. are conferred. The first step to each is

#### THE MATRICULATION EXAMINATION.

There are two types of the examination—one with Latin, and one without. The latter is now generally taken by science students. If Latin is not taken, another language apart from English (*e.g.*, French) must be included.

#### THE INTERMEDIATE EXAMINATION IN SCIENCE

is the next step, and it cannot be taken until a year after passing the Matriculation examination. Here there is a choice of subjects—*viz.*, four out of the following seven: For a *pass*, pure mathematics, applied mathematics (*i.e.*, mechanics), experimental physics, chemistry, botany, zoology, and geology. For *Honours* any one or more of the following: pure mathematics and mechanics, experimental physics, chemistry, botany, zoology. The examination is held in July, and the fee is 5*l.* Particulars will be found in "Regulations Relating to Degrees in Science," to be obtained on application to the External Registrar, the University of London, South Kensington, London, S.W.

Two courses are now open to the student. A year after the Intermediate, and at least three years after matriculating, he may enter for

#### THE FINAL EXAMINATION,

selecting three out of ten prescribed subjects, which are: Pure mathematics, applied mathematics, astronomy, experimental physics, chemistry, botany, zoology, physiology, geology, and psychology. This may be taken for pass or the honours degree may be taken in one branch only, a related subject having to be included in the course of study. The examination is held in October yearly, and the fee is 5*l.*

For the B.Sc. Degree by Research the student must be nineteen, and he cannot enter until after passing the Intermediate examination, and two years before he proposes to proceed to the degree he must notify the University authorities of his intention to submit a thesis on the research which he is to undertake. His proposal must be approved by the Board of Studies, who consider his fitness to

do the work. If approved the research student must for two years carry on his research in a school or schools or under a teacher or teachers recognised by the University, if he be an internal student, or, if he be an external student, at some institution approved by the Senate. Other formalities have to be adhered to, all of which are detailed in the "Regulations," which can be obtained from the Secretary of the Senate, University of London, South Kensington, S.W.

The D.Sc. Degree is granted on a similar principle to that just detailed, two years after the B.Sc. has been taken. In addition to submitting a thesis, candidates for the degree are expected to be so fully conversant with the branch of science they profess as to be able, if required, to satisfy any test of their acquirements in that branch that it may be thought expedient to apply. The fee is 20*l.*

The degrees of B.Sc. and D.Sc. are also given in the faculties of engineering and economics.

#### OTHER DEGREES.

**Birmingham University** grants the B.Sc. degree in (1) pure science and (2) applied science, the latter in civil, mechanical, or electrical engineering, mining, and metallurgy. Candidates for any of these must pass the Matriculation examination held in June and September yearly. The subjects are: English history and literature; mathematics; three of the following (of which one must be a language): Latin, Greek, French, German, Italian, Spanish, higher mathematics, experimental mechanics, chemistry, physical geography, botany, animal biology, geometrical drawing. Engineering candidates take mechanics as the science subject, and they may take higher mathematics instead of one of the languages (2) and (3), but candidates for the degree in pure science must take French and German either when matriculating or subsequently before being admitted to the degree. Fee 2*l.* A few examinations are recognised in lieu of this one. Students must put in three sessions of study at the Birmingham University, the curriculum extending over three years, and there are Intermediate and Final examinations to pass. Fees 8*l.* The M.Sc. degree is granted on examination after one more academic year of study, and D.Sc. two years after the B.Sc. on the result of an original research. Dean, Professor J. H. Poynting, at the University.

**University of Manchester**.—The degrees of B.Sc., M.Sc., and D.Sc. are conferred. Candidates must have passed the Matriculation examination and have attended approved courses of study for three years subsequent to Matriculation. The subjects for the Intermediate examination are three of the following: Pure mathematics, applied mathematics, physics, chemistry, and biology. Two subjects may be taken in any one year, reserving the third subject for a subsequent year, provided that the three subjects are passed not less than one year before the Final examination. For the last named the subjects are two of the following: Pure and applied mathematics, physics, chemistry, zoology, botany, physiology, geology, mental and moral science (or engineering, applied mechanics and electricity, and agriculture). Certificates of satisfactory attendance at an approved class in Greek, Latin, French, or German must also be presented. There is also an honours B.Sc. degree granted in one of the following schools: Mathematics; engineering; physics; chemistry; zoology; physiology; geology, mineralogy, and palæontology; botany. The "University Calendar," price 3*s.* (Sherratt & Hughes, Manchester), gives the ordinances and regulations regarding the degrees. The University Registrar is Mr. Edward Fiddes, M.A.

Science degrees are also granted by the Universities of Leeds, Liverpool, and Sheffield on similar conditions to the foregoing.

**Edinburgh University**.—B.Sc. is granted in pure and applied science (engineering, public health, and agriculture). Candidates must pass the Preliminary examination in English and another language, mathematics, and dynamics, or a third language. The examination is held in September and March of each year in Edinburgh. Fee 10*s.* 6*d.* A degree in arts exempts from it. The curriculum for the degree lasts for three academic years, including seven courses of instruction, of which at least four must be taken at the Edinburgh University and the others there or at an approved institution. There are two science examinations. Fees 6*l.* 6*s.* D.Sc. is granted five years after the B.Sc. by professing one subject, or on the basis of research. Fee 10*l.* 10*s.* Dean, Professor Geikie, at the University.

**Glasgow University** is opening its degree of B.Sc. to students of pharmacy.

**Royal University of Ireland**.—Candidates may present themselves for the B.Sc. degree examination one academic year after graduating in any Faculty in the University—*e.g.*, as B.A. They may select any one of the following groups of subjects: Mathematics and mathematical physics; mathematical physics and experimental physics; experimental physics and chemistry; chemistry and geology; geology, botany, and zoology; biology (including botany, zoology, and physiology). Fee 1*l.*



### Qualifications in Chemistry.

For those who desire to practise in consulting and analytical chemistry, or technological chemistry, a suitable course of education and training is prescribed in the Regulations of the Institute of Chemistry of Great Britain and Ireland. This institution was founded in 1877, and incorporated by Royal Charter in 1885, for the following purposes :

- (i.) To promote the better education of persons desirous of becoming professional, consulting, and technological chemists, and chemical advisers on scientific subjects;
- (ii.) To examine candidates, and to grant certificates of competency; and
- (iii.) To elevate the profession by setting up a high standard of scientific and practical proficiency, and by insisting on the observance of strict rules in regard to professional conduct.

The Institute consists of Fellows, Associates, and Students. Every candidate for admission to the studentship must be at least seventeen years of age and must have passed an approved Preliminary examination. Most of the examinations recognised by the General Medical Council are also recognised by the Institute, provided the candidate can produce a certificate of having passed the full examination including the following subjects :

- (a) English language.
- (b) Latin.
- (c) Mathematics, comprising arithmetic, algebra to simple equations inclusive, and geometry, including Euclid, Books I., II., III.
- (d) One of the following: French, German, Italian, any other modern language approved by the Council, Greek, or logic.

At the time of registration as a student, the candidate must be at one of the institutions recognised by the Council of the Institute or a pupil of a Fellow of the Institute. The annual registration-fee is 5s.

For the subsequent stages two courses of study are open to the student: one takes three years (entirely collegiate), and the other four years (half collegiate and half with a F.I.C.). Two examinations are held—the Intermediate and the Final. Those who have a recognised degree in chemistry, physics, and mathematics are admitted to the Intermediate examination without other evidence. The curriculum must include theoretical and practical chemistry and physics, mathematics, and one of the following: Higher physics, advanced mathematics, mechanics, and chemical engineering, metallurgy, geology and mineralogy, physiology, bacteriology, and agriculture.

The Intermediate examination may be taken. It requires a thorough acquaintance with the fundamental laws of chemistry; with the methods of preparation of the more important elements and compounds, both inorganic and organic; with the principles of chemical classification, and the current theories of chemical science. The fee for the examination (which occupies at least four days) is 5*l.* 5*s.* The holders of certain honours degrees and diplomas are exempt from the Intermediate examination if they produce satisfactory evidence of having been trained in theoretical and practical chemistry, in theoretical and practical physics, and in one optional scientific subject in accordance with the Regulations. Among these we note those holding :

*B.Sc., Edinburgh.*—Final examination, with special distinction in chemistry. (The same for *B.Sc.* of the other Scotch Universities.)

*B.Sc., London.*—Final examination, with First or Second Class Honours in chemistry. (The same for Manchester.)

The Final examination also occupies at least four days, and those who have passed the Intermediate or have been exempted from that examination may enter for it. Fee, 5*l.* 5*s.* The Examiners are at liberty to apply any test which they think desirable either *visà voce*, or by writing, or by experimental work, in order to obtain evidence as to the knowledge of theoretical and practical chemistry possessed by the candidate, who is required to show a thorough acquaintance with at least one of the following branches of chemistry, to be selected by himself: (a) mineral chemistry; (b) metallurgical chemistry; (c) physical chemistry; (d) organic chemistry; (e) analysis of food and drugs and of water; (f) biological chemistry. Candidates in Section (e) are required to show a general knowledge of the therapeutic effects of chemicals and drugs, and of the quantities which, taken internally, would be injurious or fatal to man. This section is the one which those who wish to become public analysts should take. It is recognised by the Local Government Boards.

For admission to the Fellowship, an Associate is required to have been registered for three years, and to have been continuously engaged during that period in the study and practical work of applied chemistry in a manner satisfactory to the Council. Entrance fee 5*l.* 5*s.* Fellows and Associates pay an annual subscription of 1*l.* 1*s.*, or Fellows may pay a life-composition of 21*l.*

The book of regulations may be obtained, for 1*s.*, from the Registrar of the Institute, 30 Bloomsbury Square, London, W.C. The Institute has also published a "List of Official Chemical Appointments," which gives particulars of many openings for young professional chemists. The price of this is 2*s.* 3*d.*, post free.

The Institute holds extra examinations in chemical technology, and grants certificates in respect thereof. These examinations are open only to Fellows and to those Associates who have been registered as such for at least one year. Candidates are required to produce evidence of practical technical training. The examinations comprise the following:

- (a) The application of well-known chemical and physical laws to industrial operations.
- (b) The development, control, and transmission of power and heat.
- (c) A working knowledge of operations and plant of which general use is made in industrial works for the treatment and handling of materials, finished products, waste products, and effluents, including a practical acquaintance with fittings and stores.
- (d) The properties of materials affecting their application to the construction of plant and apparatus in chemical works.
- (e) Some ability in interpreting drawing of chemical plant and in making rough sketches.
- (f) The calculation of working-costs, and a general knowledge of the clerical work connected with manufacturing operations.

Each candidate is required to select one important industry, in which his knowledge of the above subjects may be tested. Questions which might involve the disclosure of unpublished processes and details of plant in particular works will not be asked. All candidates are expected to give evidence of a general knowledge of chemical technology. The Examiners will take into account original work and special knowledge, but not so as to excuse the candidate from any part of the examination. The first examinations under this scheme will be held in October 1906.

### COLLEGE DIPLOMAS.

In addition to the Institute of Chemistry requirements it should be noted that every university college in the country has a course of study for those seeking a diploma and training in chemical science. In London there is the course of the City and Guilds Central Technical College, Exhibition Road, London, S.W., one of the best-equipped science schools in the world. It is a school of the London University, and it is advisable for those who enter upon the course for the College diploma to pass the University Matriculation examination, which is accepted under certain conditions in lieu of the College entrance examination. Otherwise they must pass an entrance examination which includes mathematics, mechanics, one language, and mechanical drawing, physics, chemistry, and one foreign language. The curriculum of study for the diploma course in chemistry is as follows:

*First Year.*—All first-year students of the College take the same course, dividing their time between mathematics and mechanics, chemistry, physics, and mechanical drawing and workshop practice.

*Second Year.*—Chemistry, twenty hours a week; mechanical drawing, ten hours a week.

*Third Year.*—Chemistry, twenty-five hours a week; mathematics, five hours. One of the chemical laboratories of the College is devoted to research, and there are some research fellowships attached.

### METROPOLITAN SCIENCE SCHOOLS.

#### DAY CLASSES.

**CITY AND GUILDS CENTRAL TECHNICAL COLLEGE**, Exhibition Road, S.W.—There are three diploma courses, each of three years: (1) Civil and mechanical engineering, (2) electrical engineering, (3) chemistry. Fees 36*l.* per session.

**TECHNICAL COLLEGE**, Leonard Street, Finsbury, E.C.—The course extends to two years, except in the case of applied chemistry, which occupies three years. Fees 20*l.* per session. Evening classes are held at moderate fees. Principal, Professor Silvanus P. Thompson.

**UNIVERSITY COLLEGE, LONDON**, Gower Street, W.C.—Faculty of Science. The tuition-fees for a complete course for *B.Sc.* amount to about 100*l.* Principal, Dr. T. Gregory Foster, Ph.D.; Dean of the Faculty, Professor J. N. Collie, Ph.D., F.R.S.



**KING'S COLLEGE, STRAND, W.C.**—Fees are about the same as at University College. Evening classes are held. Professor R. T. Hewlett, of this College, holds occasional courses in practical and clinical bacteriology which are useful for pharmacists. The fee is 3*l.* 3*s.*

#### EVENING CLASSES.

The following notes on some of the evening schools and institutions in London demonstrate that the pharmaceutical student is well cared for outside the special schools which cater for his requirements. In all of the places where evening classes are held it is possible to obtain instruction in chemistry, physics, botany, and Latin at moderate fees, so that any apprentice or assistant may greatly increase his chance of passing if, having negotiated the Preliminary, he commences the study of the more important subjects from the early days of his apprenticeship.

It is possible at many of the institutions to take the London B.Sc. by evening study alone, although it is not advisable if day-work can by any means be accomplished. The fees vary usually between 6*l.* and 10*l.* for the complete course. At all the schools dealt with below students can be registered as internal students of the University. Physics, chemistry, and botany classes up to the Minor requirements can usually be attended at fees varying from 7*s.* 6*d.* to 20*s.* per session, and for the Major from 12*s.* 6*d.* to 30*s.* for physics, 21*s.* to 45*s.* for chemistry, and 10*s.* 6*d.* to 37*s.*, or with field classes 45*s.*, for botany. Most of the polytechnics and technical institutions offer scholarships and prizes which give the student free tuition or reduce his expenses to a negligible amount. In some cases half fees only are charged apprentices, and this concession is sometimes extended to include assistants. The London County Council offer for competition among evening students in science and technics, residing within the administrative County of London, evening scholarships of the value of 5*l.* and 10*l.* For details address the Education Department of the Council, Victoria Embankment, London, W.C.

**BATTERSEA POLYTECHNIC, Battersea Park Road, S.W.**—Lecture and laboratory courses in chemistry cost 10*s.* per session. Special arrangements for laboratory-work for pharmaceutical chemists, students, and others are made on Wednesdays, permitting eight hours continuous work, the fee per session being 27*s.* Laboratory instruction in technical and commercial analysis is given at a fee of 12*s.* per session. Courses for the Inter. Sc. and Final B.Sc. (London), including practical work, 3*l.* 10*s.* and 4*l.* per session respectively.

**BIRKBECK COLLEGE, Bream's Buildings, Chancery Lane, E.C.**—The composition-fee for the London B.Sc., three years' course, is 16*l.*, and for the Conjoint Board, Dental, and L.S.A. examinations 9*l.* Evening classes in chemistry, botany, and physics are held at fees varying from 27*s.* for Stage I. to 50*s.* for Stage III. (Board of Education), including practical and field work.

**SIR JOHN CASS TECHNICAL INSTITUTE, Jewry Street, Aldgate, E.C.**—Fees for classes in science subjects are 7*s.* 6*d.* for members and 10*s.* for non-members for all grades, and including laboratory-work. The composition-fee for a four-year course for the London B.Sc. is 4*l.* 2*s.* 6*d.*

**CITY OF LONDON COLLEGE, White Street, Moorfields, E.C.**—Special courses in chemistry for the Minor and Conjoint Board are held at 42*s.* and 25*s.* respectively, to which must be added a 6*s.* membership fee. Lectures and laboratory-work in all science subjects. Fees, 4*s.* and 17*s.* respectively, with 3*s.* extra for non-members.

**EAST LONDON COLLEGE, Mile End Road, E.**—Evening University courses in science, under Professors R. A. Lohfeldt and J. T. Hewitt, cost 10*l.* 10*s.* A four-year course in general chemistry is also provided, the total fees being about 4*l.* At the Bow and Bromley branch Mr. J. H. Harrison lectures on botany; the fees for practical work and lectures are 4*s.* for Stages I. and II., and 10*s.* 6*d.* for Stage III. A two-month summer class is also held in practical British botany at a fee of 1*s.* 6*d.*

**SOUTH-WESTERN POLYTECHNIC, Manresa Road, Chelsea, S.W.**—Suitable courses in chemistry, botany, and materia medica for the Minor, Major, Conjoint Board, Dental Institute, and Society of Apothecaries' examinations are provided at 35*s.* per session. The complete B.Sc. (Lond.) course, including a special language class, costs 6*l.* 10*s.*

**WEST HAM TECHNICAL INSTITUTE, Romford Road, E.**—Lectures and laboratory-work in pharmacy, materia medica, and dispensing are held on two evenings in the week, from 7 to 10 P.M., with a lecture and practical class in chemistry on another evening for the same time, the inclusive fee for the session (October to July) being 42*s.* Mr. W. W. Hellyer, chemist and druggist, is the lecturer. Lecture and labora-

tory classes in chemistry following the London University syllabuses are provided at inclusive fees of 11*s.* 6*d.* for junior classes and 14*s.* for senior classes per session. Evening degree courses in science, extending over three years, cost about 9*l.* Apprentices residing in the borough are charged half fees (this includes assistants).

Evening science classes are also held at the Go'dsmiths' College, New Cross, S.E. (of which Dr. Arthur Lapworth is the Director); Northern Polytechnic, Holloway Road, Islington; Wandsworth Technical Institute, High Street, Wandsworth, S.W.; and the Carpenters' Institute, Stratford, E. For particulars apply to the respective Secretaries.

#### PROVINCIAL SCIENCE SCHOOLS.

The subjoined is not a complete list of the provincial schools, but it suffices to show students in the towns named that the opportunities for study are at their doors. They should write to the Colleges for full information.

**ABERYSTWYTH.**—*University College of Wales.*—Composition-fee for the science course, 10*l.* per session, exclusive of practical work.

**BANGOR.**—*University College of North Wales.*—Terms as at Aberystwyth.

**BARROW IN-FURNESS.**—*Technical Schools, Abbey Road.*

**BELFAST.**—*Queen's College.*—Arrangements similar to Cork (*q.v.*).

**BIRMINGHAM.**—*University* (see p. 273); *Municipal Technical School, Suffolk Street.*—Evening classes, some of which are suitable for pharmacy students.

**BRADFORD.**—*Municipal Technical College.*

**BRISTOL.**—*University College.*—The science courses are arranged for the examinations of the London University.

**CARDIFF.**—*University College of South Wales and Monmouthshire.*—Fees for science classes, 12*l.* 12*s.* per session.

**CORK.**—*Queen's College.*—Courses for the science degrees of the R.U.I. and London are given. Registrar, Mr. Alexander Jack, M.A.

**DUBLIN.**—*Royal College of Science.*—The fees for a three-years' course for A.R.C.Sc.I. are 5*l.* Registrar, Mr. P. A. E. Dowling.

**DUNDEE.**—*University College.*—Botany, chemistry, and physics are taught in day classes, and chemical technology in the evening, at the Technical Institute. Secretary, Mr. R. N. Kerr.

**EDINBURGH.**—*Heriot-Watt College, Chambers Street.*—Here very efficient science courses are arranged in day and evening classes at low fees.

**GLASGOW.**—*Technical College.*—Day and evening classes in chemistry, applied chemistry, mechanical and electrical engineering, etc. Fees for three-years' course, about 40*l.* to 50*l.*

**LEEDS.**—*University.*—The instruction is adapted to the University degrees and diplomas in science. There are complete courses of instruction in the faculties of arts, science, medicine, law, and technology.

**LIVERPOOL.**—*University of Liverpool.*—Courses for degrees in science or special pursues.

**MANCHESTER.**—*University.*—The three-years' course for B.Sc. in applied chemistry costs about 70*l.* (see before). There are evening classes including a course in chemistry (fee 4*l.* 4*s.*) and botany (fee 2*l.* 2*s.*). The *School of Technology* also gives sound education in science (Principal, Professor Pope, F.R.S.).

**NEWCASTLE-UPON-TYNE.**—*Armstrong College.*—Fees for curriculum of B.Sc. Durham, 60*l.* Day and evening classes are held. Secretary, Mr. F. H. Pruett.

**NOTTINGHAM.**—*University College.*—Day and evening science courses are given, including various special courses in chemistry. Registrar, Mr. P. H. Stevenson.

**PLYMOUTH.**—*Municipal Science, Art, and Technical Schools.*

**SHEFFIELD.**—*University.*—Day and evening courses in most science subjects are given at low fees (*e.g.*, chemistry 1*l.* 10*s.* per session). Registrar, Mr. W. M. Gibbons.

### Diplomas in Optics.

**S**IGHT-TESTING and spectacle-fitting are now a well-recognised branch of the chemist's business, in many cases overshadowing the original vocation. The fact that a chemist's training conduces to carefulness in testing and nicety in spectacle-fitting accounts for the success of pharmacists in this side-line. The greater proportion of the candidates who negotiate the optical examinations of the Spectacle-makers' Company are connected with the drug-trade, so that the share of chemists in the future development of ophthalmic optics will be considerable. It may be noted that at present the diplomas of the S.M.C. and the British Optical Association have no legal status, but



there is a movement on foot to promote a Sight-testing Bill in Parliament. Such a Bill was actually introduced in the House of Lords early in the year, but, owing to a divergence of opinion in the optical trade, was abandoned. When the sections of opticians agree on a common ground, it is probable that another Sight-testing Bill will be brought forward. Whether the Bill will pass is another matter: it can only pass if the medical opposition—somewhat unreasonable and unreasoning—is much modified. In the meantime chemists who take up the optical side-line would be well advised to obtain a diploma, if only for the sake of the training needed for passing the examination.

THE SPECTACLE-MAKERS' COMPANY, LONDON, hold examinations about twice a year, usually in February and November. These are held in London and sometimes in the provinces.

There are three Divisions of the Company's examinations, namely:

1. *The Special Examination*, taken in three sections: (a) A written examination in elementary mathematics [a candidate will be excused this section (a) on production of a certificate from any of the following examining bodies, showing a sufficient knowledge in mathematics: The Oxford and Cambridge Local; Science and Arts, South Kensington; Mathematics, Stage II; Matriculation of any University; College of Preceptors' first class; Major examination of the Pharmaceutical Society of Great Britain]. (b) A written examination in light, optics, the elementary theory of optical instruments, and in heat. (c) A *vivâ-voce* examination in the use and adjustment of the camera and projection apparatus, the telescope and binocular, the microscope, the sextant [a candidate who has been connected as master or assistant with the optical industry for over seven years is entitled to be excused the whole of this Special examination. Chemists and druggists are exempt from (a), and pharmaceutical chemists from the whole of the Special examination; see *C. & D.*, August 6, 1905, p. 245].

2. *The General Examination*, taken in three sections: (d) A written examination in general and visual optics; (e) a *vivâ-voce* examination in general and visual optics; (f) a practical examination in the optical analysis of lenses, knowledge of materials employed and workmanship, and frame-fitting. [Until 1908, a candidate who has been engaged as Master or as Principal Assistant in fitting spectacles for at least ten years, and who is over thirty-five years of age, will be excused Section (d) of this General examination, as well as the whole of the Special examination, provided that he enters for the examination in Sight-testing.]

3. *The Examination in Sight-testing*, taken in two sections: (g) A written examination in optics as applied to sight-testing; (h) a practical examination in the adaptation of lenses to correct errors of vision.

In the near future the Company will require evidence of experience before admitting a candidate to the examination.

*The Diplomas.*—The diploma in General Optics is conferred on a candidate who has passed the General examination (preceded by the Special, if necessary). This diploma, however, will not be granted alone unless the candidate undertakes not to engage in sight-testing. The diploma in Sight-testing will only be granted to a candidate who has already gained the diploma in General Optics.

The following is the syllabus of the examinations:

(1) *For the Special Examination.*—(a) Elementary mathematics as applied to optics.—Arithmetic; algebra to quadratic equations; equations; the measurement of trigonometrical angles; the elementary use of tables of natural sines, cosines, and tangents, and of tables of logarithms and reciprocals. Text-books: "Elementary Algebra," Hall and Knight; "Elementary Trigonometry," Hamblin Smith. (b) Light and Heat.—Elementary laws of light; laws of refraction; the index of refraction; refraction as applied to lenses and prisms; conjugate foci; formation of images; laws of reflection as applied to curved and plane mirrors; umbra and penumbra; photometry; dispersion and achromatism; lens-systems and their aberrations; the elementary theory of optical instruments; the construction and uses of instruments for measuring temperature, atmospheric pressure, and moisture. Text-books: "Heat and Light," Glazebrook; "Optical Tables and Data," Silvanus P. Thompson. (c) Practical work with Instruments.—A general acquaintance with the construction and use of the camera, projection-apparatus, telescope, binocular, microscope, and sextant; use of the vernier. Text-book: "Drawing, Optical, and Surveying Instruments," Heather.

2. *For the General Examination (formerly termed the "Modified").*—(d) and (e) Light.—Elementary laws of light; laws of refraction; the index of refraction; refraction as applied to lenses and prisms; conjugate foci; formation of images; laws of reflection as applied to curved and plane mirrors. Text-books: "Heat and Light," Glazebrook; "Optical Tables and Data," Silvanus P. Thompson. (d) and (e) Visual Optics.—General anatomy of the human eye; the course of light passing through the media of the eye alone and modified by spherical and cylindrical lenses and prisms; hypermetropia; myopia; astigmatism; presbyopia; instruments commonly used for determining the refraction of the eye; trial lenses; test-types; astigmatic chart; the optometer; the principle of the ophthalmoscope and retinoscope; transposing. Text-book: "Refraction of the Eye," Hartridge. (f) Practical Work in Visual Optics.—Testing a plane surface; measurement of focal length of spherical, cylindrical, and compound lenses; use of the spherometer or lens-meter; determination of the axis of a cylinder, and the angle of deviation of a prism; analysis and neutralisation of spherical, cylindrical, and compound lenses, and lenses combined with prisms; centering and adjustment of spectacle lenses and frames; face-measurement for spectacles; knowledge of the materials and of the workmanship employed in the manufacture of lenses and frames; use of pebble-tester; reading and writing prescriptions for lenses and frames. Text-book: Taylor and Baxter's "Key to Sight-testing."

3. *For the Examination in Sight-testing.*—(g) The theory and methods of the determination and correction of errors of refraction and accommodation in the healthy human eye. (h) The determination of visual acuity; the practical correction of errors of refraction and accommodation by subjective methods; muscle-testing; a knowledge of the instruments used for objective sight-testing; colour-blindness. (A candidate is permitted to use his own trial-case and test-charts, and may employ such methods—whether subjective or objective—as he is accustomed to, in order to arrive at the correction needed by the subjects he is required to test at the examination.)

In addition to the books mentioned above, the following are recommended to candidates: "Contributions to Photographic Optics," by Professor O. Lummer; "Photographic Optics," by R. S. Cole; "Optics," by A. S. Percival; "Practical Physics," by Glazebrook; "The Microscope," by Gage; "Ophthalmological Prisms," by E. E. Maddox; "Physics," by Ganot.

The fees are (1) for the Special examination 2*l.* 2*s.*, (2) for the General examination 3*l.* 3*s.*, (3) for the Sight-testing examination 2*l.* 12*s.* 6*d.* The re-examination fee is 1*l.* 1*s.* Further particulars can be had from Colonel T. Davies Sewell, 11 Temple House, Temple Avenue, E.C.

THE BRITISH OPTICAL ASSOCIATION (Incorporated 1895), 199 Piccadilly, London, W., has an examination-scheme. There are two grades of examination—membership and fellowship, the former being obtained by examination in the dioptric grade and the latter in the fellowship grade. Examinations are held twice yearly in London, in May and November. For the dioptric examination candidates must be at least eighteen years old, but certificates are not granted to persons under twenty-one. The fee is 3*l.* 3*s.* Qualified chemists of Great Britain and Ireland are exempt from Part (a) of Section III., which deals with physical optics. The fellowship examination is only available for candidates who have passed the dioptric examination. The fee is 5*l.* 5*s.* Dr. Reginald S. Clay, Principal of the Northern Polytechnic, Holloway, N., is the examiner in theoretical optics, and he is assisted in practical subjects by members of the optical trade. The Secretary of the Association is Mr. J. H. Sutcliffe, who also prepares candidates for the optical examinations.

THE SOCIETY OF CHEMIST-OPTICIANS (Hon. Secretary, Mr. J. Harcombe Cuff, 25 Friern Barnet Road, New Southgate, London, N.) looks after the interests of chemist-opticians, and has obtained concessions from the Spectacle-makers' Company in regard to the "Special" examination of that body. Members and associates of the Society of Chemist-Opticians are entitled to a rebate on the fees of the official instructor. The subscription to the Society is 5*s.* per annum.

#### OPTICAL INSTRUCTION.

THE NORTHAMPTON INSTITUTE, Clerkenwell, London, E.C.—The optical course conducted at this institute is unique, and the attendance of students has so increased that in the next session the department will be conducted



in the building of the British Horological Institute, Northampton Square (opposite the Northampton Institute). There are day and evening courses, the head of the department being Mr. S. D. Chalmers, M.A. The other lecturers and instructors are Mr. H. S. Ryland, Dr. E. Claude Taylor, M.D., Dr. W. Ettles, M.D., Mr. R. A. Ives, Mr. H. S. Jerdan, and Mr. E. T. Martin. The whole field of optics is covered, both theoretically and practically. The work of the courses commences on October 1. The fee for the complete day course in technical optics is 15*l*. Full particulars are given in the prospectus of the institute, or can be obtained on application to Dr. R. Mullineux, the Principal.

MR. LIONEL LAURANCE, Orthos House, 21 John Street, Bedford Row, W.C., conducts correspondence and personal classes in visual optics in preparation for the examinations of the Worshipful Company of Spectacle-makers. The fees vary from four to eight guineas, according to the course that is taken; the Special examination of the S.M.C. (without heat) is 6*l*. 6*s*., other courses being in proportion. Mr. Laurance is official instructor to the S.M.C., also to the National Association of Goldsmiths, and the Society of Chemist-Opticians.

THE SCOTTISH OPTICAL COLLEGE, 157 St. Vincent Street, GLASGOW.—Founded in September 1905. Tuition is given orally in weekly day and evening classes held during the winter months. A course of instruction is also given by correspondence, supplemented by a short day course of practical sight-testing. A class is also conducted in Edinburgh. The fee for the full course is four guineas.

## Legal Reports.

### High Court Case.

"MRS. POMEROY."

In the Chancery Division of the High Court on August 9, before Mr. Justice Buckley, the case of Mrs. Pomeroy, Ltd., v. Scalé was heard.

Mr. Warmington, K.C., said he had to ask for an injunction to restrain until judgment or further order the defendant in this action from carrying on the business of complexion specialist under the name of Pomeroy or any other style of which the name Pomeroy formed part. In 1896 Mrs. Jeannette S. Scalé carried on business as hygienic complexion specialist at 29 Old Bond Street, under the name of Mrs. Pomeroy. In September of that year Mrs. Pomeroy, Ltd., was registered to buy the business, and under an agreement of October 23 Mrs. Scalé was allotted 1,550 fully-paid shares of 1*l*. each. From 1896 to 1906 she was manager of the business. In May last an extraordinary resolution was passed to wind up Mrs. Pomeroy, Ltd. (No. 1), and on July 16 the plaintiff company was incorporated. On July 30 an assignment was executed by the No. 1 Company of the business to the plaintiff company. On the latter date Mrs. Pomeroy advertised that she was no longer with the company, and that her business address would be 33 Old Bond Street, where she would be personally in attendance for professional services. That was what induced the action, and on these facts counsel submitted that plaintiffs were entitled to an injunction.

His lordship said there was no representation that the defendant was carrying on the plaintiffs' business.

Mr. Warmington stated that she was carrying on business under the name of Mrs. Pomeroy, which was a trading name not her own. She had sold the business and the goodwill, and a trade-name was part of the goodwill.

His lordship remarked that according to the law anyone could use any name he liked, so long as he did not do so in order to deceive.

Mr. Warmington submitted that the defendant could not use plaintiffs' name for trade purposes, and that to do so was derogating from the grant of the goodwill.

Mr. Buckmaster, K.C., who appeared for Mrs. Pomeroy, said that the business was largely of the character of a consulting business. Ladies would come to see Mrs. Pomeroy personally, and she would advise them of the steps they should take to prevent the ravages of time and other defects from which they might suffer. The plaintiffs sought to acquire not the right to sell goods, but the benefit which attached to the skill of Mrs. Pomeroy personally, and the whole point in the case was whether that lady was to forego

the personal reputation she had got in her own name. In the absence of a covenant there was nothing to justify her loss, and there was no case made out for an injunction.

His Lordship, in giving judgment, said this was not a case in which the defendant was pretending to carry on the business of the plaintiffs, or the business she had sold to the plaintiffs. Mrs. Pomeroy had advertised: "Mrs. Jeannette Pomeroy begs to inform the public that she is no longer connected with the company called Mrs. Pomeroy, Limited, and that her address will be 33 Old Bond Street, where she will be in personal attendance daily, and where her various preparations can be obtained. Any announcement that Mrs. Jeannette Pomeroy is engaged or interested in the business carried on at any other address is wholly unauthorised and incorrect." The lady's name, in the strict and proper sense, was Scalé, but in her affidavit, which was entirely uncontradicted, she said that during the period she had been in business she had adopted the name of Pomeroy. It was a family name. She was known by that name to a vast number of people in this country and abroad. She had been represented by photographs throughout this country, the United States, and elsewhere by the title "Mrs. Pomeroy," and she was desirous that her children should be called that name. The expression "Mrs. Pomeroy," according to that affidavit, was an expression which conveyed a particular person, and he held that the words "Mrs. Pomeroy" did identify this lady. He did not say that there were not serious questions which would have to be discussed at the trial of the action, but for the purposes of an interlocutory injunction he thought the plaintiffs failed. He would make no order, except that the costs would be costs in the action.

Mr. Buckmaster, K.C., said the defendant would undertake not to solicit or to sell any of the secret recipes or prescriptions the benefit of which were sold by the defendant to the plaintiffs.

### Poisoned-flesh Prohibition Act.

#### ARSENICATED MEAT.

At Shrewsbury on August 2, Edward Roberts, assistant dispenser at the Salop Infirmary, was charged with laying meat mixed with arsenic in Fish Street. The case caused some local sensation, owing to a recent epidemic of dog-poisoning in the borough. Evidence of seeing prisoner throw down in the street a parcel wrapped in tissue paper was given by the police, and by Edward Rogers, porter, in the employ of Mr. W. Adams, pharmaceutical chemist.—John William Parry, dispenser at the Shrewsbury Dispensary, said accused had lived with him for ten years. The poisons at the dispensary were kept in a cupboard in the dispensing-room, and Roberts had access to the cupboard. Such poisons as arsenic and strychnine were kept in the cupboard. Tissue paper similar to that produced was kept in the dispensing-room. During the time the accused had been with witness he had done his duty well and had borne a good character.—Mr. T. P. Blunt, public analyst, deposed that the meat was impregnated with arsenic, more than enough to kill a man.—For the defence medical evidence was called to show that accused had been suffering from acute mental derangement. The Magistrates found the charge proved, and fined Roberts the maximum penalty of 10*l*. with 2*l*. 11*s*. 6*d*. costs, or two months' imprisonment in default. The money was paid by Roberts's brother, who was present in court.

## Gazette.

### Partnerships Dissolved.

**Ringrose, D., and Cobb, A.,** Cambridge Road, E., cork-merchants, etc., under the style of Ringrose & Cobb.

**Robinson, A., and Riddell, R. G.,** Rotherham, Yorkshire, physicians and surgeons, under the style of Robinson & Riddell.

### The Bankruptcy Acts, 1883 and 1890.

#### ADJUDICATION.

**Evans, Charles Edward,** Chatsworth Road, Clapton, N.E., medical practitioner.

#### RECEIVING ORDER.

**Morford, Rupert,** Shepton Mallet, Somerset, veterinary surgeon.



## Deeds of Arrangement.

**Brewerton, Thomas**, 49 Higher Parr Street, St. Helens, Chemist. In this matter the creditors include Messrs. J. Thompson, Ltd., Liverpool (25*l.*), and J. & H. Wilson, Sheffield (11*l.*).

**Snow, John F.**, 26 Chesterfield Street, Nottingham. Dry-salter. The scheduled creditors are Messrs. L. Wolfe, Birmingham (12*l.*); E. H. Butler & Sons, Leicester (11*l.*); and Cussons, Sons & Co., Manchester (16*l.*).

## New Companies and Company News.

**WM. ALFRED JONES "THROATLETS," LTD.**—Capital 6,000*l.*, in 1*l.* shares (2,000 6-per-cent. preference). Objects: To carry on in the United Kingdom or elsewhere the business of manufacturers and vendors of pastilles, lozenges, and other confectionery, proprietary articles, patented and other specialities, etc. The first subscribers are: W. A. Jones, J. Jones, C. D. Jones, and G. W. Jones, all of Liverpool; J. Roberts, Bootle; W. H. Thomas, Birkenhead; and W. E. Dobson, Liverpool. No initial public issue. Registered without articles of Association.

**YMO CORK STOPPER CO., LTD.**—Capital 7,500*l.*, in 1*l.* shares. Objects: To acquire certain patents relating to the manufacture of cork stoppers for bottles, etc., to adopt an agreement with J. Howard, J. E. Howard, and S. A. Newton, and to carry on the business of manufacturers of and dealers in corks, cork rims, bottles and containers, etc. No initial public issue. The first directors are S. A. Newton (managing director and chairman), J. Howard, and J. E. Howard. Qualification 500*l.*. Remuneration 20 per cent. of the net profits after payment of 5 per cent. dividend. Registered office, 73 St. John Street, London, E.C.

**UNION RUBBER AND CHEMICAL CO., LTD.**—Capital 5,000*l.*, in 1*l.* shares. Objects: To carry on the business of chemists, lighting, heating, and lubricating oil boilers, refiners, and dealers, etc. The first subscribers are: G. W. T. Leeson, Fern Acre, Timperley, Chcs., manufacturer; T. A. Rowley, 34 Claremont Road, Alexandra Park, Manchester, traveller; W. B. Arkless, 17 Abington Road, Sale, Chcs., manufacturer; E. A. Fasnacht, The Hollies, Clayton Bridge, Manchester, technical chemist; C. R. Lindsey, Chatham Street, Clayton, Manchester, chemical manufacturer; H. Worsley, 47 Mablefield Road, Fallowfield, Manchester, clerk; and S. Hammett, 6 Forest Range, Levenshulme, Manchester, clerk. No initial public issue. The first directors are not named. Qualification 100*l.*

**WM. OLDEYD & SONS, LTD.**—Capital 40,000*l.*, in 1*l.* shares (12,000 preference). Objects: To acquire the business of glue and gelatine manufacturers and merchants and flock and waste merchants carried on by C. Oldroyd, W. G. Oldroyd, and T. Oldroyd at Scott Hall Mills, Buslingthorpe, Leeds, as "Wm. Oldroyd & Sons," to adopt an agreement with the said vendors, and to carry on the business and that of chemical-manure manufacturers, bone crushers and merchants, manufacturing chemists, manufacturers of and dealers in chemicals for use in agriculture, stockkeeping, and farming, makers of oil cakes, and other artificial feeding-stuffs, etc. No initial public issue. The first directors are C. Oldroyd, W. G. Oldroyd, T. Oldroyd, and A. W. Cornwallis. The said A. W. Cornwallis may retain office while holding 5,000*l.* preference shares, with 125*l.* per annum as remuneration. Registered office, Scott Hall Mills, Buslingthorpe, Leeds.

**HEGRO, LTD.**—Capital 5,000*l.*, in 1*l.* shares. Objects: To acquire the business of manufacturers of a hair-wash known as "Hægro" carried on by N. H. Cook, J. G. Cook, and W. L. Hutchison, to adopt an agreement with the said vendors, and to carry on the said business and that of manufacturers of toilet requisites, perfumes, powder, and soap, etc. The first subscribers are: N. H. Cook, 112 Torriano Avenue, Camden Town, N.W., dispenser; J. G. Cook, 111 Highgate Road, N.W., dispenser; W. L. Hutchison, 57 Tavistock Road, W., accountant; A. N. Scott, 18 Ironmonger Lane, E.C., C.A.; E. B. L. Morris, 65 Gracechurch Street, E.C., engineer; K. B. Woodd Smith, 65 Gracechurch Street, E.C., engineer; and R. Atkinson, Moorgate Station Chambers, E.C., publisher. No initial public issue. The first directors are Colonel S. M. Benson, J.P., A. C. C. E. Liardet, and W. C. May. Qualification 100*l.*. Remuneration 200*l.* per annum, divisible. Registered office, 32 Temple Chambers, E.C.

**ELBE FRÈRES, LTD.**—Capital 5,000*l.*, in 1*l.* shares (2,000 "A" and 3,000 "B"). Objects: To acquire from E. B. Barboni the process for the synthetic or other manufacture of "Neroli" oil, and similar processes invented or to be invented by him for the preparation and manufacture of essential oils or substances, and to carry on in the United Kingdom, France, and elsewhere the business of manufacturing chemists, perfumers,

soap-makers, distillers, manufacturers of toilet and medicinal preparations, etc. The first subscribers are: S. J. H. Knight, 7 Union Court, E.C., solicitor; W. Rayner, 7 Union Court, E.C., manager; G. D. Price, 8 Union Court, E.C., A.C.A.; G. B. Wickes, 7 Union Court, E.C., solicitor; L. J. Linton Harris, 39 Lombard Street, E.C., secretary; W. H. Mead, 9 King Street, St. James's Street, S.W., manufacturers' agent; and E. F. Champion, 10 Union Court, E.C., solicitor. Minimum cash subscription 10*l.*. The first directors are G. C. Kingsbury (chairman), F. C. Mareh, E. B. Barboni (managing director), and B. H. Rolfe. Remuneration of chairman 200*l.* per annum; of other directors 150*l.* each per annum. Registered office, Queen Anne's Chambers, Westminster, S.W.

**BRITISH NICOTINE CO., LTD.**—Capital 10,000*l.*, in 1*l.* shares. Objects: To acquire a nicotine-factory at Bootle, Lancs, to adopt an agreement between the Imperial Tobacco Co. (of Great Britain and Ireland), Ltd., of the first part, the British Tobacco Co., Ltd., of the second part, and this company of the third part, and to carry on the business of chemists, manufacturers of and dealers in nicotine and other products from the offal or waste of tobacco-leaves, tobacco, and snuff, etc. The first subscribers are: G. A. Wills, J.P., Burwalls, Leigh Woods, nr. Bristol; C. E. Lambert, Manor House, Effingham, Surrey, tobacco-manufacturer; W. Butler, Tolworth Lodge, Surbiton, tobacco-manufacturer; H. W. Gunn, Apsley Road, Clifton, Bristol, tobacco-manufacturer; W. N. Mitchell, Oakley, Leigh Woods, Bristol, tobacco-manufacturer; R. F. Green, 16 Victoria Road, Waterloo, Liverpool, manager of tobacco-factory; and W. L. Davies, Beechwood House, Chester, manager of tobacco-factory. No initial public issue. The first directors are the Rt. Hon. Lord Winterstoke, W. Butler, W. L. Davies, R. F. Green, H. W. Gunn, C. E. Lambert, W. N. Mitchell, and G. A. Wills. Qualification one share. Remuneration as fixed by the company.

**SPRATT'S PATENT, LTD.**—The directors have declared an interim dividend for the six months to June 30 last on the ordinary shares at the rate of 4*s.* per share.

**BORAX CONSOLIDATED, LTD.**—The directors have declared an interim dividend of 5*s.* per share in respect of the quarter ended March 31, 1906, being at the rate of 10 per cent. per annum upon the ordinary shares.

**MELLIN'S FOOD FOR AUSTRALIA AND NEW ZEALAND, LTD.**—The ninth ordinary general meeting of shareholders was held at 56 Cannon Street, London, E.C., on July 30, Mr. E. C. Bliss presiding. The Chairman moved the adoption of the report for the year ended April 30 last, which stated that the balance of trade profits, after deduction of advertising, general expenses, etc., amounted to 5,225*l.*. After crediting dividends received for the year 1905 upon investments, also providing for the expenses of management and other charges, and for the dividend of 6 per cent. paid on the preference shares, the balance to the credit of profit-and-loss account was 4,117*l.*. The directors recommended that of that sum 3,500*l.* should be devoted to the reduction of the amount now standing to purchase account, and that the balance, 618*l.*, be carried forward. Dr. J. J. Pilley seconded, and the motion was carried unanimously. Dr. Pilley was re-elected a director, and the auditors were reappointed.

At the ANNUAL MEETING of the South Metropolitan Gas Co. on August 8, Sir George Livesey said it is a serious matter for the gas companies that the price of tar is so low. Tar is to-day only about the same value as in the days previous to the discoveries which led to the production of aniline dyes and other synthetic products. The enormous benefit which has been derived from tar, as the outcome of Sir William Perkin's researches, have been absolutely lost to England. The English manufacturers have allowed the trade to slip away from them, and it has gone to Germany. He suggested that the gas companies should seek to sell their tar for other purposes than distilling. It is one of the most valuable things for road-making. The right policy would be to sell the tar for road-making at a little over 1*d.* per gallon, in which case a large quantity would be taken and the roads of England would be vastly improved. The surplus tar would then have a chance of realising its proper value for distilling purposes.

**ZANZIBAR VANILLA.**—According to the report of the British Vice-Consul at Zanzibar the experiments made by the Government in the cultivation of vanilla have given most satisfactory results, about 1,400 lb., which was sent to the United Kingdom in 1905, realising an average of 4*s.* per lb. There are only between forty and fifty acres under cultivation as yet.

"ARE WE TOO SQUEAMISH?"—This is the title of a long letter by Mrs. Arthur Stannard (John Strange Winter) which appeared in a recent issue of the London "Daily Telegraph." Mrs. Stannard, in her usual vigorous, outspoken style, tells why she thinks we as a nation are becoming too squeamish. The letter is bringing many criticisms and commendations, and the subject is likely to prove a fruitful source of newspaper-discussion during the dog-days.



## A Serious Exhibition.

THAT was the name given by our guide to the Austrian Royal-Imperial Exhibition now being held at Earl's Court, and the need for the appellation probably lies in the fact that Earl's Court is rather a gay place, sometimes, so that the exhibits are subsidiary to the gaiety. Not so this year. We have seen many international exhibitions here and elsewhere, and in elegance of exhibits, variety, and worth the Austrian one vies with them except in regard to size—which is an advantage rather than otherwise. It is not possible to exhaust great international exhibitions; one can do the Austrian fairly well in an afternoon and be delighted. The art displays are particularly fine, and typical of the races which populate Austria-Hungary. Besides, there is a striking way of showing glimpses of Austrian scenery, the pictures being placed at the end of an oblong compartment glazed in front, and just before the flow merges into picture a bit of a terrace, or something of the kind, makes the picture very real-looking. Home industries are represented in one of the courts, and in Dalmatia we struck several specimens of rosemary oil and olive oil, unpretentiously displayed, but some of them excellent. We hope to have specimens of these reported upon later. There is interest in all these racial representations, but the chief interest undoubtedly lies in the great halls where representations of Austrian industries are displayed. The object of the Exhibition is to encourage trade between Austria and Great Britain. The Austrian Government has given 40,000*l.* to help the Exhibition, and all the exhibits had to pass the ordeal of a selective committee whose aim was to place the best before the British public, and the whole has been arranged by the Lower Austrian Industrial Association, with the co-operation of the Industrial Societies, Austrian Chambers of Commerce, and the Austro-Hungarian Chamber of Commerce and Industry in London. Although the objects of interest to our readers do not bulk greatly in the Exhibition, they are there to show what Austria can do in our line, and we mention them as briefly as possible, taking them in the order of the Commission's catalogue:

The "DELPHIN" FILTER, made by the Delphin Filter Co., Vienna, consists of a cylinder of stone-like material, and has been tested by Austrian experts who declare that it is germ-proof. From the examples shown in the Imperial Court we judge that it is used for industrial as well as domestic purposes.

MAX GLASER, of Vienna, exhibits a neat selection of his druggists' sundries, such as porcelain dispensing and ointment pots, bottles, boxes, and the like. The vitreous labels on the bottles are remarkably artistic, and those on the pots show novelties that suggest new lines of trade. Mr. R. B. Turner, 11 and 12 Foster Lane, E.C., is Mr. Glaser's agent in London. The exhibit is in the Ducal Hall, where also are the next here described.

TERLIK, or Terlik's lime-iron-water, is a solution of calcium and iron phosphates of a greenish colour made in the Stern Pharmacy, Vienna. Messrs. Williams, Richter & Co., 10 Grape Street, London, W.C., are agents. It has been prescribed by Dr. E. Ott, who attends our King when he is at Marienbad; and to make it better known here 2,000 samples are to be given away.

A. VON WALDHEIM, Vienna, is a name well known to many in English pharmacy. Dr. Waldheim was one of the most virile pharmacists of his day, eager in regard to pharmaceutical advancement. Therefore it was a little surprising to us to find his pharmacy in Himmelfortgasse represented at the Ducal Court by a pretty young lady who dispenses a spray of aromatic pine balsam, which, with a fir product and several medicinal specialities, makes up a nice exhibit. Several kola preparations, physiologic and tonic salts, Kaposi's hair-preparations, and Waldheim's aperient pills are included, and a neat little English catalogue describes them in terms which imply stamp-duty.

FRANK HAAS, of Prague, exhibits, close by, corsets for spinal curvature; but we note "that in order to insure a perfect fit, the deformed person must in every case personally present himself to the manufacturer." This does not predicate export business.

A good exhibit of egg-albumen (Austrian and Russian) and egg-yolk in powder is by RUDOLF KAHANE, Cracow; and KAHNEMANN & KRAUSE, Vienna, exhibit surgical dressings and cachets with apparatus. There we observed urethral bougies made of cotton-wool, a cotton-wool server for sur-

geons more elegant than the kind that barbers use, and tin boxes for holding aseptic dressings. Mr. L. Brager, 356 City Road, E.C., is the London agent.

SENNINGER'S LIGNO-SULPHITE, exhibited in the Queen's Palace, is a fir preparation made by the Kellner-Partington Paper Pulp Co., and an inhalant for bronchial troubles. It is interesting as a by-product, and, so far as we could gather, is the result of passing paper-pulping liquor over pine-needles. Austria is a great paper-producing country; in fact, one gathers new ideas in stationery and bookbinding in this Palace.

J. ODELGA, of Vienna, who, we understand, is the Austrian equivalent of Maw, displays close by complete fittings of a surgical operating-theatre. Everything is made to be sterilisable, even the pretty little dispensing-cabinet is in uniformity with the operating-tables. On this cabinet we noticed a fair-sized porcelain mortar with all-porcelain pestle, for making solutions, which we should think dispensers would find useful. There is a cabinet of surgical knives, etc., and a sterilising-apparatus for use in the operating-room.

THE ANGLO-AUSTRIAN CONDENSED-MILK Co.'s exhibit in the Imperial Court contains specimens of milk sugar and milk powder, but the educational interest of this exhibit is noteworthy, there being a good collection of bacteriologic cultures, with photographs of all micro-organisms pathogenic to milk.

JOS. NEMETZ, of Vienna, is a maker of balances of precision which deserve to be better known to chemists. His exhibit in the Queen's Palace will well repay at least a quarter-hour's study. He makes a speciality of balances in which the weights are placed outside the closed cases, and the ingenuity and mechanism displayed in these are the points to which we particularly call attention.

THE NUPHAR Co., Vienna, exhibit perfumery and soaps in the Ducal Hall. There Queen Alexandra lingered to pick out apples and other fruit made of soap, so like the real thing that she almost tasted them.

MAXIMILIAN POLAK, of Vienna, has an exhibit of toilet-combs close by, chiefly notable for the fact that styles are shown of which buyers generally do not know the origin; in fact, this maker-revealing aspect is one of the features of the Exhibition. Tradesmen of all kinds handle Austrian goods which they think are exceptionally good German products.

C. REICHERT'S microscopes are exhibited beside Nemetz's balances. There are many good examples of the instruments, besides micro-photographic apparatus, microtomes, etc., Baker being the agent in London. While referring to optical apparatus we may mention a remarkable instrument, called the "Photo-spectagraph," invented by THEODORE SCHEIMPFLUG, Vienna, and exhibited in the Imperial Court, where there is a magnificent series of photographic and lithographic exhibits. Mr. Scheimpflug's apparatus resembles a three-bellied camera, and its object is to correct photographic distortions, or to make them. Examples of what it does are exhibited.

WAGENMANN, SEYBIL & Co., of Vienna, are the leading firm of Austrian manufacturing chemists, and they are well represented in the Ducal Hall by specimens of tartaric and citric acids, prussiates, ammonia salts, chlorates, and mineral acids. The firm has a reputation for tartaric acid, which is shown in several styles, including 1-lb. bottles of small crystals, larger tins, and other packages, labelled in English. Messrs. T. Morrison & Co., 17 Philpot Lane, are their agents.

One of the most interesting exhibits, although it is modest, is made by the IMPERIAL ROYAL MINISTRY OF AGRICULTURE. It is of uranium and radium barium minerals and their products. Madame Curie gets half the uranium residues from the mines where these come from, and the Austrian Government annex the other half. Although the practical applications of radium as a curative agent are now on the wane, the exhibit should interest students, who will see on a single board the origin of the thing that makes some chemists think that the atomic theory is disintegrating.

These observations serve, we hope, to indicate that this year's Earl's Court Exhibition cannot be passed by as frivolous. Besides, retail chemists and medical men, who are asked about such places as Carlsbad, Pullna, Levico, Marienbad, Bilin, Baden, Franzensbad, and other Austrian places whose waters cure the ailing, will by a visit to the Exhibition almost see the places, for each has its court, and there pictures or models of the towns are displayed. The Exhibition will be open until October.

THE QUESTION OF INVOICES and their arrangement, says a correspondent, is a sore trouble because of their varying dimensions. Why not have a universal system of sizes, as in the case of microscope-screws, etc.?



## Personalities.

MR. FRANCIS ROBERT DAWSON, wholesale and retail chemist and druggist, of 3 Bridgeman Terrace, Wigan, has been appointed a Justice of the Peace for the borough.

MR. ERNEST W. JONES, Ph.C., manager of Messrs. Armour & Co.'s medical-product department in London, left on Thursday for a business-trip to Chicago and Canada.

MR. W. ARMSTRONG STOREY, son of Mr. E. H. Storey, pharmaceutical chemist, 42 Castle Street East, London, W., has passed the Matriculation examination of the University of London at his first attempt.

WE had a call this week from Mr. F. C. Constable, representing Mr. F. H. Neale, chemist and importer, Hay Street West, Perth, Western Australia, who is to be in London for a few months, with the object of securing agencies. Letters may be addressed to him at the office of the *C. & D.*

DR. GEORGE SENTER, B.Sc., Ph.C., has been appointed an examiner in chemistry for the examinations of the Royal College of Physicians of London. Dr. Senter was formerly a Bell Scholar of the Pharmaceutical Society of Great Britain.

WE UNDERSTAND that Mr. John Twinberrow, pharmaceutical chemist, Elbury House, Worcester, took a very active and practical interest in the arrangements for the visit of the members of the British Pharmaceutical Conference to Worcester and Malvern.

MR. S. D. LEAH has retired on superannuation from the position of Chief Inspector of Excise in Somerset House, and is succeeded by Mr. A. J. Tedder, Senior Superintending Inspector, who in his turn is succeeded by Mr. J. S. Cox. To Mr. Leah manufacturing chemists owe much, as his sympathetic bearing in the duty-free alcohol question helped greatly to secure the assistance of those in higher quarters. Mr. Thomas Tyrer has on several occasions publicly acknowledged Mr. Leah's help.

MR. MARTIN RUSHTON, of Toplis & Rushton, chemists, Zeehan, Tasmania, is now spending a holiday in England—the first since he went to the Colony nineteen years ago. Mr. Rushton was several years with Messrs. Reynolds & Branson, Leeds, and afterwards with Messrs. Corbyn, Stacey & Co., Poultry, London. He passed the "Minor" in 1886, and went out to Hobart in the following year. For nine years he was a partner with Mr. Arthur Sangster's nephew in Hobart, then moved up west to Zeehan. Business is good out there at present, but Mr. Rushton says that anyone who is doing fairly well at home should stay here, and those who are not should not think of going out to Australia unless they mean to work very hard. Mr. Rushton returns at the end of this month.

PROFESSOR HERMANN THOMS, Ph.D., has now been appointed director of the Pharmaceutical Institute of the Berlin University at Dahlem. The "Vossische Zeitung," writing in regard to the appointment, says things have changed since the entry of Thoms as Professor in 1895. He organised the pharmaceutical instruction at first in a chemical laboratory granted him for the purpose by the Government at the Agricultural College, and removed in 1900, with his pupils, to the new first University Chemical Institute. There he remained till 1902, when he removed to the Pharmaceutical Institute at Dahlem. That was a bold venture, but the confidence placed in



Thoms's ability to attract students has not been disappointed, and the number has increased from term to term. That scientific discovery, in addition to pharmaceutical instruction, has found a home in the new Institute is proved by the "Arbeiten aus dem Pharmazeutischen Institut der

Universität Berlin," published yearly by Thoms, who is one of the most prolific of pharmaceutical writers. Among the best-known of his works are the "Schule der Pharmazie" and his "Arzneimittel der organischen Chemie." Thoms was born at Neustrelitz on March 20, 1859.

PROFESSOR E. RAY LANKESTER, Director of the Natural History Museum, has been called upon by the Trustees of the British Museum to resign his post next May. His salary is 1,200*l.* a year, and the highest pension he can receive is 300*l.* a year. Professor Ray Lankester is President of the British Association, and has written to the "Times" explaining the position and protesting against his dismissal. It appears that he was appointed by the three Principal Trustees (the Archbishop of Canterbury, the Lord Chancellor, and the Speaker of the House of Commons), and considers that he is entitled to hold his post until removed by the same trustees. Professor Ray Lankester was Linacre Professor in the University of Oxford before he was appointed to the directorship of the Natural History Museum.

## Business Change.

MR. W. H. HOBBS, 5 Trinity Square, Tower Hill, London, E.C., has acquired a half-share in the business of Messrs. J. & R. V. Matthew, herb-farmers and essential-oil distillers, of Croydon and Mitcham, Mr. R. V. Matthew having retired from that firm. The business will be carried on as Matthew & Hobbs.

## Trade Notes.

MESSRS. ARTHUR H. COX & Co., LTD., Brighton, have acquired the sole proprietary rights in Barton's Brighton glycerine-cream, white liniment, and dentifricium. These toilet specialities are obtainable wholesale from the London sundries houses.

A CHEAP LINE IN SOOTHERS is put on the market by Messrs. Florian J. Hyam & Co., of 67 St. Mary Axe, London, E.C. They are displayed three dozen on a show-card, and are well-made teats of good rubber. Full particulars as to prices may be obtained by applying to Messrs. Hyam, who have various other specialities interesting to chemists.

## Recent Wills.

EDWARDS.—Mr. David Powell Edwards, chemist and druggist, Bishop's Castle, Salop, who died on May 12, aged forty-four, left estate valued at 3,933*l.* 14*s.* 8*d.* gross, with net personalty 3,806*l.* 5*s.* 4*d.*

GAIR.—Mr. Duncan Gair, B.Sc., F.I.C., pharmaceutical chemist, of Conon Bridge, who died intestate on April 8, aged twenty-eight, left personal estate valued at 112*l.* 9*s.* 7*d.*

JOLLY.—An inventory has been lodged with the Sheriff Clerk of Lanarkshire at Glasgow of the personal estate of the late Mr. Alexander Walker Jolly, analytical chemist, some time of Greenhead House, Govan, but lately of the Champion Reef Gold Mining Co., Ltd., India, who died at Koler there. The total personal estate amounts to 1,622*l.* 15*s.* 3*d.*

SPRING.—The will of the late Mr. Henry Spring, founder and managing director of Spring & Co., Ltd., manufacturing chemists, of Brigg, has been proved at 3,516*l.* 16*s.* 7*d.* gross.

YOXALL.—Probate of the will, dated August 6, 1902, of Mr. Henry Yoxall, pharmaceutical chemist, 5 Cornmarket, Belfast, who died on June 27 last, has been granted to his daughters, Misses Louisa and Mary Elizabeth Yoxall, the personal estate in the United Kingdom being valued at 6,817*l.* 13*s.* 1*d.*

THE UGANDA ADMINISTRATION has decided to plant the fore-shore of the Victoria Nyanza in the proximity of Entebbe with citronella grass. The object of planting this grass is to drive away the tsetse fly, which is one of the causes of sleeping sickness. There is, therefore, a prospect of an essential-oil industry being opened up in Uganda.



## Trade Report.

**NOTICE TO BUYERS.**—The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers stock the goods. Qualities of drugs and oils vary greatly, and higher prices are commanded by selected qualities even in bulk quantities. It would be unreasonable for retail buyers to expect to get small quantities at anything like the prices here quoted.

### 42 Cannon Street, London, E.C., August 9.

**T**HERE has been less activity in the drug and chemical markets this week, as the holiday season is now at its height. In several directions, however, a very fair business is being done for the time of the year, and values are, on the whole, steady. The interest in menthol and peppermint oil is maintained, and values are again slightly higher, but the volume of business done has naturally been much smaller this week. Quinine has been reduced officially by the German makers, but the market is quite apathetic. Quicksilver is 5s. lower, but mercurials are unaltered, as on the previous advance in the metal, makers made no alteration. Methylated spirit has advanced owing to a slight increase in s.v.r. Turpentine and Italian castor oil are also dearer. Shellae is steady, and a fair speculative business has been done in Zanzibar cloves at rising prices. The principal alterations in values are as follows:

Higher	Firmer	Easier	Lower
Castor oil (Ital.)	Citric acid (foreign)	Pepper (white)	Cinchonidine Cocaine
Cinnamon oil	Coriander		(crude)
Methylated spirit	Cumin-seed		Quicksilver
Turpentine	Fenugreek- seed		Quinine and salts
	Menthol		
	Orris		
	Peppermint oil		

### Cablegrams.

**HAMBURG, August 9:**—Menthol is firmer at 20½m. and Japanese peppermint oil at 13½m. per kilo. Japanese wax, refined camphor, and cumin-seed are all firm.

**SMYRNA, August 8:**—Large sales of opium have been made, on behalf of both speculators and United States buyers, at firmer prices, including common t.q. Smyrna at from the equivalent of 7s. 4d. to 7s. 6d., selected t.q. at from 7s. 10d. to 8s., and extra Karahissar at 8s. 3d. per lb.

**NEW YORK, August 9:**—Business in drugs is quiet. Druggists' opium in case lots is firm at \$3.10 per lb. Quinine is easy at 15c. per oz. Golden seal (Hydrastis) is slow of sale at \$1.35. Refined camphor is higher at \$1.05 per lb. Cascara sagrada is dull of sale at 6c. per lb. Rio ippecacuanha is firmer at \$1.85, as is Cartagena at \$1.80. Menthol has advanced to \$2.75 per lb., a rise of 10c.

### German Drug-market.

*Hamburg, August 7.*

Business in general is very quiet at present.

**AGAR-AGAR** continues firm, in spite of several arrivals: it is quoted to-day about 310m. per 100 kilos.

**ALOES** (Black Curaçao) are quoted 60m. per 100 kilos.

**CAMPHOR**.—Refined is firm, German refined in bells offering at 875m. and Japanese in tablets at 865m. per 100 kilos.

**CANTHARIDES** are steadier at 9m. per kilo.

**CITRIC ACID** is still very firm at 330m. for crystals.

**CORIANDER-SEED**.—Mogador for shipment is held at 30m. and Russian at 52m. to 58m. per 100 kilos.

**CARAWAY-SEED** is advancing, 1906 crop being held at 54m. per 100 kilos.

**ERGOT** on the spot costs 240m. per 100 kilos, and forward 230m. per 100 kilos.

**FENUGREEK** is firm; Morocco is held at 28m. per 100 kilos., while Indian is quoted 19½m.

**GOLDEN SEAL** is quiet at 14½m. per kilo. for Canadian. **IPECACUANHA** is firm at 15½m. for Cartagena and 16½m. for Rio.

**JAPANESE WAX** is firm at 110m. per 100 kilos.

**LYCOPodium** is steady at 425m. per 100 kilos. in cases and 415m. in bags.

**MENTHOL** is very firm at 19½ to 19¾m. per kilo.

**SENEGA** is quiet at 515m. per 100 kilos. for shipment.

**SPIRIT OF TURPENTINE** is advancing, 89½m. per 100 kilos. being quoted for American on the spot.

**OILS (FIXED)**.—Castor is unchanged at 57m. per 100 kilos for first pressing in barrels. Cod-liver is unchanged at 70m. per barrel. Palmkernel is firm at 58½m. to 59m. per 100 kilos., and Chinese wood on the spot is worth 60m. per 100 kilos.

**OILS (ESSENTIAL)**.—Peppermint is firm, H.G.H. offering at 14½m. to 15m. per lb. and Japanese 12½m. to 12¾m. per kilo. Star-anise is quoted 12m. per kilo.

### Dominican Citrate of Lime.

Writing from Dominica on July 3, a correspondent of the W.I. Committee "Circular" states that the first shipment of citrate of lime from Dominica on a commercial scale has been made, and although it is a little premature to reckon on this as an industry there is no doubt that should the experiment be successful the manufacture of citrate of lime instead of concentrated lime juice will rapidly develop.

The present price of Siellian citrate of lime is about 29l. per ton, so that there is every inducement to ship the citrate instead of the juice.

### Opium in China.

Adverting to Mr. Morley's recent speech in the House of Commons on the Chinese opium question, the Peking correspondent of the "Times" cables that China is dependent to the extent of 830,000l. a year on duties paid on imported opium, so that the sympathetic resolution passed by the House of Commons on May 30 has caused considerable embarrassment in high official circles. There is, however, a growing feeling of disquietude among the better Chinese against the enormous extension of the growth of the poppy. The most eager advocate of its restriction and final abolition is Tang-Shao-yi, who admits that native opium is produced to an extent ten times greater than that of the imported article, the comparison being 30,000 tons to 3,000 tons. Moreover, there is a great development in the use of morphine, the Japanese importing large quantities of cheap hypodermic syringes. The "Times" correspondent believes that China will eventually ask India to consent to an annual reduction in the import to China, which would have the effect of extinguishing the trade in ten years, and as an evidence of good faith will issue an Imperial Edict condemning the use of opium and forbidding the employment in the Government service of any opium-eater, and ordering an annual reduction in poppy-cultivation, leading to its extinction in ten years.

### Foreign Trade.

The remarkable development of the foreign trade of this country again continued during July, the imports having increased 3,867,000l., or 8 per cent., and the exports by 5,622,000l., or 17 per cent. In the aggregate the increase in the value of imports to date amounts to 31,299,000l. or 9 per cent., and the exports to 30,509,000l., or over 14 per cent. As regards imports during July there was an advance of 1½ millions in food, drink, and tobacco, raw materials were up by over a million sterling, but cotton fell by 728,000l., manufactured articles also advanced by 1½ millions, this schedule including an increase of 52,053l. in chemicals, etc., our imports for the month being valued at 843,383l. The feature of exports during July is an increase of 4,431,000l. in manufactured articles, among which chemicals, drugs, dyes, and colours represent 1,193,376l., or 125,330l. more than the corresponding month of 1905, and for the seven completed months the figures run to 9½ millions sterling, or 566,000l. more than last year. With few exceptions all the heavy-chemical items show increased shipments, and as some staples have appreciated considerably in price lately it may be reckoned a remunerative business is being done. Aniline and coal-tar oils appear to have had a "boom," the exports trebling those at the same time of last year. Carbolic acid, naphthalene, and anthracene show a slight falling-off. Quicksilver exports increased considerably, as also did imports, which amounted to no less than 824,930 lb. in July, compared with 7,800 lb. in July 1905.

**ACID, CITRIC**, remains in good demand, foreign being again firmer at from 1s. 7½d. to 1s. 7¾d. English is scarce, makers quoting 1s. 8d. nominal, and in second-hands a shade less will buy.

**ACID, TARTARIC**.—Steady and unaltered, at 10¾d. for foreign and 11¼d. for English.



**ALMONDS.**—The unfavourable crop reports so far as regards Italy are confirmed, and this year's yield will be below the average. "Bears" are becoming alarmed, and are buying back their contracts, thus materially assisting the upward movement.

**ANISEED.**—Further small sales of Russian have been made at 25s. 6d. per cwt. on the spot.

**ANTIMONY.**—Quiet. English regulus is offered at from 103l. to 105l., and for Japanese crude near at hand 65l. 10s. per ton, c.i.f., has been paid, spot being quoted at 72l.

**BALSAM TOLU.**—Genuine in 50-lb. tins is held for 1s. per lb.

**CANARY-SEED** is steady for ordinary quality at 42s. 6d. to 45s. per quarter. Turkish is offering at 37s. 6d. to 40s., c.i.f. terms, according to position of shipment, but business is slow. Fine seed to arrive is dearer, with transactions at 51s., c.i.f., for Mazagan.

**CARAWAY-SEED.**—Good old crop Dutch has been sold on the spot at 25s. 6d. per cwt. For new crop 25s. 6d., c.i.f. terms, is asked, but the quality is not very good.

**CARDAMOMS.**—In auction last week the top price paid for fine pale bold Ceylon-Mysore was 3s. 1d. per lb., bold and medium palish selling at 1s. 8d., medium palish to pale 1s. 2d. to 1s. 4d., dull 1s. to 1s. 1d., small and medium pale 1s., dull 10½d., small palish to pale 10d. to 11½d., and pickings 10d. to 10½d. per lb.

**CASCARA SAGRADA.**—Some spot business has been done at 32s. 6d. per cwt., and for shipment 32s., c.i.f., has been refused.

**CHAMOMILES.**—The situation at the moment is puzzling, it being doubtful whether prices will go higher or lower. It is stated Belgian producers are doing a good business with France. First pickings of the new crop have been sold on the spot at 100s.

**CINCHONA.**—The auctions to be held in Amsterdam on August 23 will consist of 9,878 packages Ledgeriana and hybrid, also 568 cases and 1,209 bales of Succirubra. These figures compare with a total of 7,128 packages offered at the auctions on July 12. Sixteen packages of Java coca-leaves will also be offered. The Amsterdam stock in first-hands on August 1 consisted of 4,890 packages Government bark and 17,240 packages private bark, making 22,130 packages altogether. These figures include the first-hand packages to be offered in the above-mentioned auction.

**CINCHONIDINE.**—Lower. The value of this secondary alkaloid is now about 6d. per oz., as with the low price of quinine there is practically no demand.

**CLOVES.**—The spot market for Zanzibar has been steady with small sales of fair at 7½d. to 7¼d., and for delivery, market is firmer, the sales including : June-August at 7¼d., August-October 6¾d. to 6¾d., October-December 6½d. to 7d. per lb.; for arrival November-January and January-March shipment has been sold at 6½d., c.i.f. d/w.

**COCOA-BUTTER.**—At auction at Amsterdam, on August 7, forty tons Van Houten's sold at 69c. to 71½c., the average price being 70.60c., against 68.15c. for the July auction; seven tons de Jong sold at 67½c. to 67c., and of ten tons Mignon four tons sold at 67c., the balance being bought in. At the auction to be held in London on August 14, sixty tons and eight cases of 3-oz. tablets Cadbury's will be offered.

**COCAINE.**—The price of *Crude* in Hamburg is lower at about 235m. per kilo.

**CORIANDER-SEED** is again slightly dearer, good Morocco having been sold at 15s. per cwt., and 15s. 6d. is now asked.

**CUMIN-SEED.**—Ordinary Morocco has been sold at 32s. per cwt. on the spot, being dearer.

**EUCALYPTUS-LEAVES.**—In auction last week six bags of long green sold without reserve at 7s. per cwt., not 7d. per lb., as stated.

**FENUGREEK-SEED** is dearer. Morocco has been sold at 13s. per cwt. on the spot. East Indian is offering at 10s., c.i.f. terms.

**GALLS.**—The quotation for China galls is 53s., c.i.f., for arrival.

**GAMBOGE.**—Good Siam pipe is worth 16l. to 16l. 10s., and fair 15l. 10s. per cwt.

**GUM ARABIC** is quiet for East Indian descriptions.

Ghatti is more plentifully offered, but buyers appear to be well stocked. Soudan gums, although quiet, show a firmer tendency, as advices from Egypt are stronger. Fair half-hard sorts are obtainable at 27s. 6d. and for shipment 25s., c.i.f., is quoted. In auction last week fine pale Australian sold at 73s., glassy red at 67s. to 69s., siftings at 60s., and block at 40s. per cwt.

**HONEY.**—Sales of white Californian have been made at 28s. per cwt.

**IPECACUANHA.**—The s.s. *Amazon* has brought 15 packages of Rio. The remainder of the 25 bales of Johore left unsold from the auction were sold immediately afterwards at 7s. 5d. to 7s. 6d., according to quality. Good sound Rio is held at 7s. 6d. and Minas at 7s. 6d.

**JUNIPER-BERRIES.**—The new crop is now coming on the Italian market, and as the weather has been favourable the quality, so far as at present can be judged, is good. Compared with previous years, prices, although reasonable, are high, as there is no stock of old berries, while the demand has been active. For September shipment from 10s. to 11s. 6d. per cwt., c.i.f. London, is quoted, according to quality.

**LINSEED.**—The new crop Dutch is of poor quality, and high prices are asked. The spot values are unchanged at 48s. to 50s. per quarter for good old crop.

**MENTHOL.**—Previous to the holidays the spot market closed firm at 8s. 10½d., but with the opening of business this week 9s. to 9s. 1½d. has been paid for Kobayashi in fair quantities, with 9s. 3d. asked at the close; and Yazawa has been sold at 8s. 9d. spot. It is said that sales of Kobayashi for shipment to Hamburg have been made at 10s., c.i.f., but those in a position to judge are sceptical.

**MERCURIALS.**—Although mercury is 5s. per bottle cheaper there is no alteration in mercurials. Calomel is 2s. 6d., corrosive sublimate 2s. 2d., red precipitate 2s. 9d., and white precipitate 2s. 9½d. per lb., these being the makers' list prices and for lots below 2 cwts.

**MUSK.**—Tonquin is firmly held at 72s. 6d. per oz. for fine thin blue skin Pile I., and 53s. for old-fashioned. Pile III. of both descriptions is scarce and wanted. Assam grain has been sold at 50s., and Russian Cabardine at 18s. 9d. per oz. in quantity.

**OIL, ANISEED, STAR,** is quieter after the fair business of last week, with sellers at 5s. 4½d. in quantity, and 5s. 5d. to 5s. 6d. for small lots, spot. Previous to the holiday, business was done to arrive at 5s. 2½d., c.i.f., October-November shipment.

**OIL, CASSIA.**—Very firm, 70 to 75 per cent. oil being held at 3s. 3d. spot, sales having been made slightly under, and for 80 to 85 per cent. 3s. 7d. spot is wanted. Business in 70 to 75 per cent. oil for shipment has been done at 2s. 1½l. per lb., c.i.f.

**OIL, CASTOR.**—According to an advice from Leghorn, it is stated that the crop of Italian castor seed will be poor, and in consequence the prices for oil have advanced, finest brands of medicinal water-white in cases offering at 44s. per cwt., c.i.f. London.

**OIL, CINNAMON-LEAF.**—The price of Ceylon is now 2½d. per oz.

**OIL, COD-LIVER.**—The Norwegian cod-liver oil market continues very quiet, but holders have hitherto refused to sell below 65s. per barrel, f.o.b. Bergen, for finest non-congealing Lofoten. The exports from Bergen up to date amount to 8,143 barrels, against 6,630 barrels at the corresponding date of last year.

**OIL, LEMONGRASS,** remains very quiet on the spot at 7d. per oz., and 5½d., c.i.f., for arrival.

**OIL, OLIVE.**—Crop reports from Sicily are not very favourable, and although there is practically no demand from abroad, prices have advanced 5s. to 10s. per ton for the common grades.

**OIL, PEPPERMINT.**—Prices are still tending higher with further spot sales of Japanese (Kobayashi) dementholised oil at 5s. 9d. to 6s. per lb., closing sellers, and for July-August shipment 5s. 9d. to 6s., c.i.f., has been paid. In American tin oil, various brands have been sold at 13s. on the spot, while *Todd's* crystal white is quoted 15s. and H.G.H. at 15s. 6d., London terms. There are as yet no



offers of new crop American, and it is said the Japanese crop has been damaged to the extent of 20 per cent.

**OIL, WOOD.**—Quiet at 32s. per cwt. on the spot.

**OILS, FIXED.**—*Linseed* is easier at 20s. 3d. per cwt. spot for London pipes and 20s. 4½d. spot in barrels. *Rape* is steady and unchanged at 27s. spot for ordinary brown in barrels and 28s. 9d. for refined in casks and 25s. for Ravison. *Coconut* is firm at 37s. spot for Cochin and 33s. for Ceylon. *Cottonseed* is unchanged at last week's advance to 21s. for crude and 22s. 3d. to 23s. 6d. for refined. *Lagos Palm* is firm at 29s. 6d. per cwt. spot. *Turpentine* has advanced fully 2s. since last week, the market having shown considerable animation. American closed on Wednesday at 45s. 3d. spot. *Petroleum* is firm at last week's advance to 6½d. to 6½d. for American, 7½d. to 8d. for water-white, and 5½d. to 6d. per gal. for Russian.

The exports of turpentine from Savannah during 1905 amounted to 5,310,176 gals., against 3,577,294 gals. in 1904 and 12,000,000 gals. in 1905. Only 33,720 casks were shipped from Brunswick and 695 from Wilmington.

**OPIMUM.**—There has again been a fair demand, but the high prices now asked restrict business; for Smyrna gum, testing 11 per cent., 8s. 6d. has been paid, and fine Hadjkeni 12s. Persian has a firmer tendency, with good offering at 11s. 6d. to 12s. per lb.

**SMYRNA, July 27.**—The sales this week amount to 241 cases, as follows: Thirty-two cases old and new manufacturing for the Continent, 17 cases ditto for England, 40 cases ditto for America, five cases extra selected Yerli, and 147 cases old and new talequale at various prices for account of speculators. The market keeps steady and is well maintained by speculative purchases. We think, however, that when American and European pressing engagements have been fulfilled, and if no fresh orders come forward, an easier market may prevail. High prices, however, are being paid by native dealers for new crop, a thing which will cause a maintenance of the present firm position. The arrivals in Smyrna to date amount to 1,265 cases, against 304 cases at the same period last year.

**SMYRNA, July 28.**—Purchasers commenced at the opening of the market at a fresh advance, and for the week they amount to 241 cases, comprising 55 cases old and new Adette t.g. at the equivalent of 7s. 8d., 97 cases old and new Karahissar at 7s. 11d., 84 cases old and new choice Karahissar at 8s. 3d., and five cases new inspected Yerli at from 8s. 9d. to 9s. 2d., of which 39 cases were for local speculation. Market closes firm with buyers, and the arrivals in Smyrna amount to 1,265 cases, against 304 cases at the corresponding date of last year. The sales during July amount to 930 cases at gradually rising prices. The market at Constantinople has also moved upwards in sympathy with Smyrna, and altogether sales of about 800 cases have been made since the new season commenced, principally on account of a Japanese house who have placed orders for about a thousand cases between Smyrna, Constantinople, and producing districts. It is said these purchases are on behalf of the Japanese Government, who have hitherto bought Persian opium, probably for consumption in Korea.

A monthly report dated July 31 states that the sales during July amount to 947 cases, 150 of which are for account of local and interior speculators and the balance for Japan, America, and other consuming markets. Owing to these large purchases our market advanced fully 1s. per lb. The crop has suffered a great deal by heavy showers of rain, hail, and unseasonable weather, therefore as the estimate is now much below 8,000 cases the above prices will probably be maintained. The arrivals to date amount to 1,265 cases, against 304 at same date last year, and in Constantinople to 363 against 71 cases. The stock in first and second hands is now 2,414 cases, against 3,858 cases at same date last year, and in Constantinople 140 against 724.

**OLIBANUM.**—Steady, recent sales including fair drop at 39s. to 40s., ditto, more mixed with garblings at 31s., ordinary badly garbled at 27s. 6d., and good garblings 20s. per cwt.

**ORRIS.**—Prices in Italy are still advancing, both for Florentine and Verona root, one exporter having raised his quotations by 3s. to 3s. 6d. per cwt.

**PEPPER.**—Quiet, with small sales of fair Singapore at 5½d. per lb. spot and for arrival sellers of August-October shipment quote 5½d. landed terms. *White* pepper also keeps quiet, with only retail sales of fair Singapore at 7d. and fair Penang at 6½d. per lb. Previous to the holidays 50 tons Singapore were sold for arrival for August-October steamer at 7d., landed terms, and same shipment to the Continent at 6½d. to 6½d., c.i.f. terms.

**QUICKSILVER.**—The importers have reduced their price by 5s. per bottle to 7l.; and in second-hands 1s. less will buy.

**QUININE.**—Lower. The German manufacturers have reduced the price of sulphate by ½d. per oz., to 8d. in bulk, but Howards' quotation for the sulphate remains unchanged at 9d., and in 1-oz. vials 11d. for not less than 1,000 oz. Whiffen's make has been reduced ½d., to 8d. Several of the other salts of quinine have been reduced by all makers, and those mostly in demand are now quoted as follows: Benzoate 1s. 1d., citrate 1s., hydrobromide 11½d., hydrochloride 11½d., lactate 1s. 2d., salicylate 11½d., and tannate 8d. per oz. in 100-oz. tins. Previous to the holiday small sales of German sulphate in second-hands had been made at 7½d., and there are further sellers.

The Amsterdam quinine-works reduced their prices on August 6 by fl. 1 per kilo., so that their quotations are now fl. 13.25 and fl. 16 per kilo. for Ed. II. and Ed. III. respectively.

The following figures published in the Board of Trade Returns represent the imports and exports of quinine and quinine salts during July and the seven completed months of this year:

	<i>Imports.</i>		
	1906	1905	1904
	oz.	oz.	oz.
July ... ..	78,626	59,708	114,780
January-July ...	1,215,716	437,164	782,180
<i>Exports (British).</i>			
July ... ..	126,755	60,990	37,968
January-July ..	635,226	426,528	390,213
<i>Exports (Foreign).</i>			
July ... ..	3,516	1,420	11,946
January-July ...	45,236	59,077	105,798

**RHUBARB.**—Subsequent to the auction a few cases of fair medium round Canton sold at 1s. 5d. per lb.

**SALIPETRE.**—German is dearer at 22s. 10½d. in barrels and 23s. 3d. in kegs, while British refined is quoted 24s. and 25s. respectively.

**SHELLAC** is steady, with small spot sales on the basis of 213s. to 215s. for fair TN. Good and fine orange marks sell slowly at from 226s. to 236s., A. C. Garnet at 202s., and G. A. L. at 190s. spot. Button is steady at recent rates. Futures are firm, with sales of August at 215s., September 215s., and October 216s. 6d. per cwt. For arrival a few hundred cases August shipment have been sold at 208s. to 209s., c.i.f., but higher rates are now asked.

**SPIRIT, METHYLATED.**—Owing to the advance in rectified spirit the combined methylators have advanced the price of methylated by several pence per gallon, according to quality and quantity; for chemists' use 1s. 3d. per gal. is quoted in 300-gal. lots, 1s. 9d. in 100-gal. quantities, up to 2s. for smaller quantities.

**SULPHUR.**—Further reports to hand from Messina, dated July 31, show that a complete deadlock exists in the sulphur market. The Anglo-Sicilian Co. endeavoured to dispose of considerable quantities at below market prices previous to their stock being taken over by the "Consorzio." These sales caused a decline, but the Italian Ministry stepped into the breach and prevented further selling. The position now is that the Anglo-Sicilian Co. are unable to sell, outsiders are without stocks, and the "Consorzio" are not in a position to quote. On the other hand, there is the anomaly of the immense stock, much of which cannot find warehouse-room, and is left to encumber the beach. As regards future prices, nobody has an idea of what they will be like, but the general opinion is they will not open low. Glowing accounts continue to reach Messina regarding the Louisiana mines, and the Union Sulphur Co. are bound to show fight should Sicily insist upon competing with the U.S.A., which probably she may be compelled to do considering that the immense stock of the Anglo-Sicilian Co. will have to be disposed of.

**TONKA-BEANS.**—For good Surinam 1s. 4d. per lb. has been paid, quotations for good black Para being from 10d. to 1s.

**TRACACANTH.**—There has again been a fair demand, principally in the lower grades, at between 75s. to 100s. per cwt. Baghdad firsts and seconds range in value from 13l. to 14l., thirds and fourths from 8l. 10s. to 12l. 10s., brown and yellow from 5l. to 7l. 15s., and lower grades at from 50s. to 95s. per cwt.



**TURMERIC.**—Good bright Madras finger has been sold at 24s. spot, and for Bengal 17s. spot is asked, while for arrival 14s. 3d., c.i.f. London, is quoted. Cochin is slow of sale.

**WAX (JAPANESE)** is becoming scarce on the spot, holders asking 57s. 6d., and for August-September shipment 54s. 6d., c.i.f.

## London Drug Statistics.

The following statistics are compiled from information supplied by public warehouses. They relate to the receipts and deliveries of some of the leading drugs from and into the London public warehouses for the month of July 1906, and to the stocks on July 31.

	July		Stocks		1906	
	Landed	Delivd.	1906	1905	Imprtd.	Delivd
Aloes..... cs, etc.	93	121	357	568	789	812
"..... gourds	—	—	—	80	1,765	1,815
Aniseed, star..... cs.	—	—	—	—	—	—
Arrowroot..... pkgs	514	721	9,422	12,120	10,515	7,980
Balsams..... cks, etc.	61	90	449	474	428	401
Calumba..... bgs	69	72	246	34	788	702
Camphor..... pkgs	261	227	705	1,275	5,770	5,116
Cardamoms..... "	427	431	2,033	2,228	3,240	2,913
Cinchona..... "	705	932	6,633	7,933	5,760	6,735
Cocculus indicus..... "	—	—	—	35	—	—
Cochineal..... "	18	80	202	222	334	623
Cubeb..... "	—	20	448	487	40	30
Dragon's blood..... "	26	18	95	106	128	131
Galls..... "	630	278	1,811	1,701	3,221	1,589
Gums—						
Ammoniac..... "	9	—	13	5	19	9
Animi..... "	88	114	201	257	631	663
Arabic..... "	1,143	1,353	5,264	5,722	6,429	7,591
Asafetida..... "	—	20	793	286	1,000	1,326
Benzoin..... "	315	121	1,097	897	2,079	1,723
Copal..... "	5,642	5,600	17,523	20,543	36,764	35,329
Damar..... "	397	949	2,469	2,053	4,638	3,898
Galbanum..... "	—	—	—	—	—	—
Gamboge..... "	22	35	108	63	227	124
Guaiaacum..... "	—	1	56	60	7	8
Kauri..... tons net	130	228	1,016	904	1,235	1,354
Kino..... pkgs	—	1	64	76	4	12
Mastic..... "	10	3	15	—	40	36
Myrrh, E.I..... "	65	—	227	95	346	169
Olibanum..... "	1,062	172	3,843	2,271	3,537	1,177
Sandarac..... "	210	137	818	193	1,443	1,060
Tragacanth..... "	602	1,156	6,317	7,225	8,881	8,803
Ipecacuanha—						
Cartagena..... "	2	25	45	17	87	59
H. I..... "	—	22	2	5	24	50
Matto Grosso..... "	31	29	85	180	141	174
Minas..... "	3	17	20	25	34	55
Jalap..... bls	190	20	243	151	232	127
Nux vomica..... pkgs	525	50	760	1,575	822	356
Oils—						
*Aniseed, star..... cs	—	7	82	195	15	57
*Cassia..... "	—	2	38	127	—	49
Castor..... pkgs	65	39	56	41	304	332
Coco-nut..... tons	217	113	243	318	652	641
Olive..... cks, etc.	254	290	965	608	1,997	1,488
Palm..... cs, etc.	32	87	167	207	558	607
†Quinine..... lbs	1,562	3,936	199,434	188,652	37,953	13,947
Rhubarb..... chts	55	34	128	188	187	321
Sarsaparilla..... bls	138	108	53	129	524	542
Senna..... pkgs	57	200	1,649	2,688	759	2,477
Shellac..... cs	2,224	4,375	17,476	22,394	24,450	28,415
Sticklac..... "	167	117	456	279	1,600	1,550
Turmeric..... tons	22	37	282	435	296	319
Wax—						
Bees'..... pkgs	1,214	271	2,389	1,744	4,131	3,269
Japan..... "	—	78	375	58	573	303

\* Stocks of essential oils at Smith's Wharf, Red Lion, and Bull Wharf, and Brewer's Quay are not included.

† Includes quantity at Red Lion, Bull, and Smith's Wharves, also at the Docks.

In order to encourage the cultivation of camphor in Formosa the Governor-General of the island is to give gratis three million young camphor trees.

**BALDNESS** is by no means entirely a product of present-day worry. Bald heads were known in the lotus days of Egypt, and hair-restorers were then extensively resorted to. The recipe of King Chata—the second sovereign of the First Dynasty—was a mixture of dogs' paws, dates, and asses' hoofs ground up and cooked in oil, the head to be rubbed vigorously with the preparation. What is the chemistry or rationale of this concoction?



**TO CORRESPONDENTS.**—Please write clearly and concisely on one side of the paper only. All communications should be accompanied by the names and addresses of the writers. Publication of letters does not imply our agreement with the arguments or approval of the statements therein. If queries are submitted, each should be written on a separate piece of paper. We do not reply to queries by post, and can only answer on subjects presumably of interest to our readers generally. Letters received after the early posts on Wednesday cannot as a rule be dealt with in the current week's issue.

**BUSINESS INFORMATION.**—We have very full records of the makers or agents for articles and products connected with the chemical and drug trades, and supply information respecting them by post to inquirers. Inquiries regarding any articles which cannot be traced in this manner are inserted under "Information Wanted."

### Lime-water.

SIR,—I have read Mr. W. S. Clark's interesting letter in your issue of August 4, following upon Dr. McWalter's letter. Some of the statements of Dr. McWalter are so far astray that it is surprising Mr. Clark should take so much trouble to refute them. Either Dr. McWalter's volumetric solution or his testing is strangely at fault, as it is not possible that fresh lime-water properly prepared can be under the B.P. strength. If fresh lime-water has been made in a workmanlike manner, it ought always to be over, and never under, the B.P. strength. In the olden times—that is, speaking of the 1868 B.P.—the official requirement was a practically saturated solution of lime at 15° C.—namely, 0.56 grain of CaO per fluid ounce. Subsequent Pharmacopoeias modified this requirement, and now lime-water need only contain half a grain per ounce. Some three-and-twenty years ago I went into this question and found that a saturated solution of calcium hydrate at 15° C. represents 0.561 grain of CaO in each ounce. On raising the temperature I found that the lime-content fell to 0.526 grain per ounce, which is very near the result obtained by Mr. Clark at a temperature between 20° and 25° C. I also found at that time that the average lime-water of the shops was much under B.P. strength—a fact that needs to be drawn attention to at least once in every ten years, for the best of us have short memories, and the younger members of the craft have to learn these little points by practical experience. Mr. Clark's explanations of the causes of weak lime-water do not, I think, quite touch the real source of the trouble. It is not, as he has shown, the variations of temperature, nor is it, as he suspects, the impurities in the lime. Even if the lime is not washed, all the soluble constituents are dissolved out the first time the lime-water is drawn off, and subsequent solutions contain nothing but lime. The trouble appears to me to rise from three causes. In the first place, the chemist may go on using the same lime, time after time, until it becomes entirely exhausted of CaO. Every time he adds fresh water, so much more of the calcium oxide is changed into carbonate, and the former is also gradually dissolved away till there is nothing left but calcium carbonate. Of course, the careful chemist guards against this by using fresh lime every time, but are we all careful? Do not a good few, even among high-class pharmacists, leave this common operation too often to their laboratory porter? Another source of weakness is that many chemists take no trouble about the storage of their calcium hydrate. A lime shell is so cheap that we are apt to treat it cheaply; a thing that costs practically nothing is not worth paying attention to after we have got it. We slake the shell and then put the slaked lime in any old box in any odd corner, and never give it a thought till we need a new shell. By that time the bulk of the lime has become carbonate, and our porter goes on making his lime-water out of chalk, which we retail with a sublime consciousness of rectitude as being the very finest lime-water. The most important cause of the trouble, however, is the CO<sub>2</sub> of the atmosphere. Mr. Clark does not think so, but I have proved it, and he can prove it very easily too if he likes.



Let him put 20 oz. of fresh lime-water of full strength into a 40-oz. shop-round, two days afterwards pour off 5 oz. and estimate its strength, repeating the process every two days till the whole is exhausted, and then let him write another letter giving his results. I remember being asked many years ago to investigate what the influence on trout would be by running a sewage effluent saturated with lime into a trout-stream, and I came to the conclusion, as the result of my experiments, that the influence would be very small indeed, so rapidly does the solution of lime become carbonated. Stored in an ordinary shop-bottle and sold in pennyworths, lime-water will not retain its full strength for two days, but if bottles are filled up with fresh lime-water and corked up tightly the preparation will retain its strength indefinitely. By the way, I do not understand how Mr. Clark's washing-arrangement is worked, and should be glad if he would kindly explain the *modus operandi* so far as the scrubber is concerned.

I am, etc.,

AN OLD HAND. (114/96.)

#### Where are we Now?

SIR,—For many weeks "Xrayser" has focussed attention so well on the weak points of the Pharmacy Bill, and of the pharmaceutical position generally, that little has been left to be said. He has not only focussed attention on these points, but he has kept the range with praiseworthy persistence when found. The following are some of the points he has kept in view:

The Bill calls on chemists to make great sacrifices, without granting anything at all in the nature of compensation.

It sets up a new class of dealers in poisons without being able to lay anything to the charge of the old.

Its delay in passing until autumn is merely a "respite."

For the pharmaceutical position he says the qualified man, who carries on business on his own account, is being everywhere displaced in favour of the tied slave who grubs for two pounds ten shillings a week, in the obscure and dark corner of some warehouse—a corner devoted to quack medicines and cheap-jack drugs. (The last clause is mine.)

He also adds that by all this the State is losing useful members of the commune, and the towns are losing worthy and almost indispensable citizens.

These are heavy charges, my masters, and all the heavier that they are true, but we have fought from the rising of the sun even to the setting of the same, and the battle has been all against us. The forces of injustice and immorality have everywhere prevailed, not because our cause is a weak one, or because we have fought the fight badly during these last ten years, but because we were too long in making war in the first place, and because the advent of the Limited Liability Acts in this country really meant the exit of that sense of honour, justice, and uprightness which were characteristic of Britain before.

So far as the present Bill is concerned the whole position is a muddle. Delay is indeed but a "respite." I felt from the start that we ought to have offered nothing but opposition to a Bill which was drawn up by our enemies, at the instigation of a Commission itself appointed and packed by our enemies. The Pharmaceutical Council, however, thought differently, and held out hope of amendments of an important nature. Under the inspiration of these hopes chemists were induced to send petitions to Parliament, not opposing the Bill, but suggesting amendments—of no great importance, to speak honest truth. We have thus a kind of thimble-rigging set up. If we knock over the thimble with the pea, we get our titles—in seven years; if we don't knock over the right thimble, we never get them. No; we who have honourably won them in the examination-rooms never get them. The company-promoter gets both them and us, in order that he may be yet better able to trail the fair robe of Britain's justice and honour in the mud. Ye gods! how our youthful impressions are dissipated in middle life! When I was a boy I was taught that Britain's justice and Britain's honour are unassailable, and I thought them almost equal to the justice and honour of God: now I have lived to see my country ready, and evidently willing, to sacrifice the vested interests, fairly-won titles, and even names of twenty thousand honourable and upright men, in order that a small and unimportant

body of ignorant, contemptible, vulgar company-promoters may have a free field to ride roughshod over Britain's free citizens and prosperous communities. If this is possible in the little sphere to which we belong, what may not be going on in wider spheres around us?

I see no hope of our being able to amend this Bill, and I do not think we can end it. It is ridiculous that we should allow to be placed before a Parliament in which we have over 300 sympathisers a Bill drawn up by a Parliament altogether hostile to us, with the vague information that we will be satisfied if our titles can be returned to us—after seven years. What can 300 or 3,000 sympathisers do for us in circumstances such as these?—unless, indeed, they save us from ourselves by throwing out the Bill altogether, which is not likely. If both Bills cannot be sent to a Special Commission, then I should say the best thing we can aim at is getting the Government to drop their Bill. Even now that might be done by making it clear that the measure is opposed by the whole body of chemists. It will be no easy matter, however, after the petitions which have been sent in at the instigation of the Pharmaceutical Council.

There are, further, one or two points to which I would briefly call attention. First, Lord Crewe, in stating that it is unjust for companies to take the titles which have been won in the examination-rooms from chemists, practically recognises that it is unjust for these companies to be in pharmacy at all, for every argument which tells against them taking the titles tells also against them taking the practice of pharmacy. The titles and practice of pharmacy are on exactly the same footing in the Pharmacy Acts. The next point is this—that the time appears to me to have come when pharmaceutical legislation of a kind which goes further than mere prevention of poisoning is required. So far legislation has aimed at the prevention of accidents and suicides only. This is absurd. These companies have introduced into pharmacy a system of quackery and humbug which is a menace to the health of the people, and is killing thousands where poisons can at the utmost kill tens. Had pharmacy been confined to the hands of qualified men, the people would never have been flooded with quack medicines, as they are now, nor would men have been able to become millionaires by placing articles not worth a penny on the market at 2s. 9d. or 4s. These are facts which ought to be taken note of in fresh legislation, and they are the strongest arguments in favour of pharmacy being confined to qualified men.

A third point is of social rather than pharmaceutical interest, but it was suggested by a note of "Xrayser's." It is this—that in many cases it is the same men who have already ruined the rural districts, who are now, by company-promotion, actively engaged ruining the towns. These men rack-rented the people in the rural districts until life became impossible; now they are coming to the towns, and by company-promotion are doing their best to crush out the worthy citizen who has always been the backbone of this and every prosperous State.

Dumfries, August 6.

JAMES REID.

#### Painless Tooth-extraction.

SIR,—In your reply to a correspondent, in the *C. & D.* of August 4, you say that your correspondent "must remember that injection methods of painless tooth-extraction are sometimes dangerous, fatal cases having been recorded within the last few years." Inasmuch as you refer to the use of beta-eucaine and adrenalin chloride in the sentence preceding the above quotation, it may quite reasonably be assumed that you include that combination in your strictures. Would you be good enough to allow us to say that since introducing "Eudrenine," about a year ago, we have sold quantities representing probably several hundred thousand doses, and there have been no fatalities in connection with its use, and no serious complaints, while the reported cases of temporary faintness, caused, no doubt, by the too free use of the anæsthetic on unsuitable subjects, can be counted on the fingers of one hand? A similar record is claimed for "Codrenine," which contains cocaine in place of eucaine. Only last week we received from a chemist and druggist who extracts teeth a letter in which he says: "I feel in duty bound to inform you that I have this year reached my 1,350 painless extractions, under 'Codrenine,' without a single failure." This gentleman



considers that with this preparation and a good syringe, aseptic methods, and careful injection, failure is impossible.

Very truly yours,

PARKE, DAVIS & Co.

#### Stolen Cachous.

SIR,—In the event of any parcels of Hooper's cachous being offered cheaply to any of your readers, we should be glad if they would communicate with us at once, as a number of these have recently been stolen, and we have not as yet been able to discover the thief.

Borough, S.E.

Yours faithfully,  
BARTLETT HOOPER & Co.

#### The Richer Book-plate.

SIR,—The book-plate of Richer, given in your issue of June 23, is certainly interesting, and I offer the following suggestion as a clue to Richer. A man of this name lived towards the end (?) of the eighteenth century, being a chalcographer by profession, in which case it is most probable that he engraved his own book-plate. I would ask those who are interested in the matter to consult Strutt's "Engravers," Vol. II., page 267, where the life of Richer will be found, written, I think, by M. Diction. Strutt's "Engravers" was published in 1785 (London), and can be consulted in the British Museum. Personally, I feel sure that the book-plate you give will be found to belong to Richer, the engraver.

Yours faithfully,  
W. SANDFORD COTTRILL.

Heidelberg, Transvaal, July 16.

#### Otto of Rose.

SIR,—Since writing my note in last week's *C. & D.*, I have received a series of samples of the typical distillates of the new crop of rose from Mr. Theodore Shipkoff, who has been kind enough to place samples of various districts, etc., at my disposal. I have examined a number of these, and find that the general characters of this year's distillates are practically identical with those of last year and the previous year. The four following typical samples are representative of all those which I have examined :

Marked	M P.°	Sp. Gr. at 5°.	Rotation	Ref. Index at 25°
From red roses only	22°-23°	0.8545	-2° 2'	1.4625
From white roses only	25°-24°	0.8555	-2° 40'	1.4645
*20,000 oz. bulk	22°-23°	0.8540	-2° 25'	1.4620
*50,000 oz. bulk	22°-23°	0.8540	-2° 3'	1.4630

\* These were otto bulked from the distillates of numerous districts.

Yours faithfully,

E. J. PARRY.

#### Mem. to Assistants.

SIR,—Kindly allow me through your valuable paper to relate an experience I have just had, in the hope that some other assistant may not have the same. A few months ago I was tempted to leave an excellent berth by a rather large salary offered me by a chemist at a seaside resort near London. An essential condition was that I should sign an agreement not to engage in business in the town after leaving him. I consented to this, and was engaged. The agreement was to be forwarded to me in town for signature. This, however, was not done, but a letter was sent saying that it would be ready for my signature on taking up my duties. I duly arrived, but still the agreement was not ready. Neither could I get it until I had taken a house on three years' agreement, and as soon as I had settled in the same the agreement was handed to me for signature. On reading it I found a clause to the effect that I should not engage in business, either directly or indirectly, after leaving him for seven years and within twenty miles. I refused to sign the agreement, and this is a lesson to me and others to see the actual agreement before accepting a situation.

A BROTHER PILL. (112/27.)

#### Legal Queries.

J. W. F. (118/43).—All wages of any clerk or servant in respect to services rendered to a bankrupt during four months before the date of the receiving order, and not exceeding 50%, are paid in full and forthwith unless the property of the

bankrupt is insufficient, in which case equal proportions are paid. This being the law, you will observe that your claim is outside the period, and must rank as an ordinary debt.

*Excise* (182/82).—If your customer gives you the money to purchase an excisable wine for him, you may do so without offence so long as you confine yourself strictly to acting as the customer's messenger, and make no profit out of the transaction.

*Cinnamon* (116/67).—We will consider the matter and reply in our next issue.

#### Miscellaneous Inquiries.

We endeavour to reply promptly and practically to trade questions of general interest, but cannot guarantee insertion of replies on a particular date, nor can we repeat information given during the past twelve months.

A. J. K. (94/21).—The formulas for combined bath and one-solution developer to which you refer were given in the *C. & D.*, May 2, 1903, p. 727. They are also given in "Pharmaceutical Formulas," (new edition).

E. G. (93/69).—CHIROPODISTs often soak their customers' feet in warm water rendered alkaline with soda before operating on corns. Another practice is to paint the corn with liquor potassæ.

*Amber* (112/40).—CONCENTRATED DEVELOPER.—We have pointed out several times that it is impossible to have a hydroquinone-and-metol developer of the concentration you mention. There is no difficulty with adurol (see *C. & D.*, July 14, p. 71) in getting the requisite concentration.

W. W. (106/58).—SKELETONISING LEAVES.—The slow method is to ferment the leaves in water for a week or so, then wash out the pulp and bleach with sulphur. The quicker way is to boil for a few minutes in caustic-soda solution, wash out the pulp, and place in weak bleaching-solution for a few days, finally washing to remove the chemicals, and drying.

R. T. (112/6).—DRY MOUNTANT for photographs.—A process for this was given in the *C. & D.*, April 22, 1905, p. 642, the following being the solution used for coating the paper:

White shellac	...	...	30 grams
Gum elemi	...	...	3 grams
Canada balsam	...	...	5 grams
Alcohol	...	...	100 c.c.

*Fly* (98/65).—The insect you send is the common pine saw-fly, *Lophyrus pini*. It is well known for its destructive habits in fir-plantations.

*Ara* (96/40).—If you will send us a small quantity of the consumption-cure, we will endeavour to find out the active principles.

X. Y. Z. (96/23).—SALE OF POISONS.—Gelseminine and hyoscyamine are "poisonous vegetable alkaloids," and must be treated as coming within Part 1 of the schedule. This applies equally to a preparation containing these alkaloids.

*Sunlight* (84/50).—We have no formula for a good combined bath and intensifier (non-poisonous) in powder form.

*Snooks* (95/22).—We do not know the rifle-cleaning tablet you refer to, but if you can send us an original package we will examine it.

A. & Co. (Torino) (86/57).—ENAMELLED LETTERS are fastened to glass with a cement made by mixing dry white-lead and dammar varnish. Another way is to use a thin paste of calomel and mucilage. Shopfitting firms (see *C. & D.* and *C. & D. Diary*) supply both enamelled copper and wooden letters.

*Lansdowne* (109/38).—You must supply us with full particulars of the sample before we can judge whether it is worth spending our time on.

#### Information Wanted.

Inquiries for the names and addresses of manufacturers, or other trade information, not traceable by reference to the advertisement-pages of "The Chemist and Druggist" and the "C. & D. Diary," or not filed in our private register, are inserted here free of charge. Postcard or other replies to any of the subjoined inquiries (addressed to the Editor "The Chemist and Druggist," 42 Cannon Street, London, E.C.) will be esteemed.

118/74. "Hand" brand kola-wine : who makes?